

1
AG84m

File Copy
Off Bureau
9/8/70
41-T-145-70
Regt 1297

HYDROLOGIC DATA
FOR
EXPERIMENTAL AGRICULTURAL
WATERSHEDS
IN THE UNITED STATES
1963

Miscellaneous Publication No. 1164

Hydrology
1970
1970

1970

Agricultural Research Service
U.S. DEPARTMENT OF AGRICULTURE

In Cooperation With

State Agricultural Experiment Stations

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

**Hydrologic Data
for
Experimental Agricultural Watersheds
in the United States
1963**

**Compiled by
HAROLD W. HOBBS
and
JAMES B. BURFORD
Soil and Water Conservation Research Division**

Miscellaneous Publication No. 1164

**Agricultural Research Service
U.S. DEPARTMENT OF AGRICULTURE**

In Cooperation With

State Agricultural Experiment Stations

Washington, D.C.

Issued July 1970

For sale by the Superintendent of Documents, U.S. Government
Printing Office, Washington, D.C. 20402—Price \$4.00

FOREWORD

This publication presents annual basic data on monthly precipitation and runoff; long-term monthly precipitation means for the locality; annual maximum discharges and volumes of runoff; daily air temperature, precipitation, and discharge (for some areas); and selected runoff events with associated data on rainfall, land use, and antecedent conditions for agricultural watersheds where research studies were in progress during the calendar year 1963. Its presentation is a continuation of the activity of processing and releasing hydrologic data of general interest gathered cooperatively with other agencies. Throughout the life of the watershed studies the State agricultural experiment stations have collaborated in the selection, planning, and operation of the research studies. In several cases, the U.S. Geological Survey and State and local agencies, such as State water boards and highway departments or local drainage and conservation districts, have assisted in the work. The classification and correlation of soils and evaluation of other watershed characteristics in the descriptions have been based mostly on field surveys of the Soil Conservation Service.

The data included here are primarily in response to a request by the Soil Conservation Service, but the information will also be useful to other governmental agencies, private engineers, and others concerned with the development and conservation of the Nation's water resources.

A handwritten signature in cursive script, reading "Cecil H. Wadleigh". The signature is written in dark ink and is positioned above the printed name and title.

Director, Soil and Water Conservation
Research Division

CONTENTS

	<i>Page</i>
Publications of earlier data	1
Form of data presentation	2
Continuing watersheds	2
New watersheds	4
Watershed descriptions	4
Standard symbols for tabular data	7
Revisions of previously published data	7
Personnel responsible for compilations	8
Additional publications by location	8
United States index map and related data	11
Location of experimental agricultural watersheds of the Agricultural Research Service by land resource regions and major land resource areas of the United States	12
Legend for land resource regions and major land resource areas of the 48 conterminous States	13
Table 1—Watersheds, listed by State, where observations were discon- tinued before January 1, 1963	14
Table 2—Experimental agricultural watershed research locations under study for 1963 hydrologic data, by States	15
Table 3—List, by States, of additions or revisions made herein to data published prior to 1963	16
Watershed data by location number and decimal paging [8.1-1 to 69.18-4, a total of 437 data sheets]	19
Table 4—Index to selected runoff events for currently operating watersheds, by States, published through 1963	457

The decimal system of paging is used to index the watershed data. Pages are numbered at the bottom according to location and watershed number, and the data for each watershed are given on one or more pages. For example, page 8.2-2 is location 8 (Vero Beach, Fla.), watershed 2 (W-2 at Vero Beach), and page 2 of the data for that watershed.

For convenience in finding items listed in tables 2 and 3 and in the "Contents" above, pages are also numbered consecutively at the top.

In table 1, page 14, discontinued watersheds are listed by State, locality, land resource area, number of units, record period, and location number. Table 2, page 15, shows a list of continuing or new watersheds by State, locality, land resource area, assigned location numbers, watershed units, and number of selected runoff events that are reported for 1963 in this publication. Table 3, pages 16 and 17, lists revisions or additions to watershed descriptions or data. Table 4, pages 457 to 465, indexes the 959 selected runoff events, by location, watershed number, drainage area, and peak rates, that have been published for the currently operating watersheds through 1963.

HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1963

This publication presents selected hydrologic data for the calendar year 1963. The data include monthly precipitation and runoff for 168 watersheds, annual maximum discharges and annual maximum volumes of runoff for 156 of the watersheds for time intervals of 1, 2, 6, and 12 hours and for 1, 2, and 8 days, daily precipitation and discharge and/or daily air temperature on 57 watersheds and detailed information for one or more selected typical storm events for 142 watersheds. The decimal page numbering system used (see explanation on page iv) is consistent with that used at the bottom of pages in the five previous publications (see next section), so that previous published records and general descriptions can be readily found and consulted. Two experimental watersheds at College Park, Md. (5.6 and 5.7), were discontinued. Information is presented for the first time for one additional watershed each at Hastings, Nebr. (44.29), Tombstone, Ariz. (63.6), Reynolds, Idaho (68.1), and for six additional watersheds at Chickasha, Okla. (69.6 and 69.14 through 69.18).

Information on selected storm events includes (1) tabular data for the 30-day antecedent rainfall and runoff before the events, (2) data on rainfall and runoff intensity or rate for the event and on accumulated depths of rainfall and runoff, (3) description of watershed conditions at the time of the selected events, (4) graphs of hydrographs and rainfall histograms, (5) watershed maps, and (6) for some of the larger drainage areas, isohyetal maps of storm rainfall distribution.

For newly established watersheds, descriptions of watershed physical characteristics, instrumentation, graphs, maps, land management, and recommended area of application of the results are also given. Descriptions of characteristics of several current watersheds, pre-

viously published, have been revised or updated and are listed in table 3, with details given on the respective data sheets.

PUBLICATIONS OF EARLIER DATA

Hydrologic data for past years on many of the currently operating experimental agricultural watersheds have been previously summarized in three looseleaf publications by the Agricultural Research Service of the U.S. Department of Agriculture, Washington, D.C. 20402. These reports, referred to as references 1, 2, and 3, are described in the following summary. Beginning with the hydrologic data for 1956-59 calendar years, the types of data previously published separately in these three references were combined in U.S. Department of Agriculture Miscellaneous Publications Nos. 945, 994, and 1070. These are listed below as references 4, 5, and 6. All six publications have been assigned these reference numbers to simplify citations to them in this and future publications:

Reference 1.—MONTHLY PRECIPITATION AND RUNOFF FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. Soil and Water Conservation Research Branch, 691 pp. 1957. (Includes physical descriptions and land use of 334 experimental agricultural watersheds at 60 locations in 27 States for the period 1923-57. Many of these watersheds had been discontinued prior to 1955.)

Reference 2.—ANNUAL MAXIMUM FLOWS FROM SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. Soil and Water Conservation Research Division, 330 pp. 1958. (Includes records from 322 watersheds at 59 locations in 27 States for the period 1923-57. Many of these watersheds had been discontinued prior to 1957.)

Reference 3.—SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. Soil and Water Conservation Research Division, 374 pp. 1960. (Includes a sampling of 1 to 6 typical runoff events from 68 watersheds at 40 locations in 25 States for the period 1933–59. The publication presents maps of each watershed, watershed conditions for each event, including the 30-day antecedent rainfall and runoff, and tabular as well as graphical data on each storm.)

Reference 4.—HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956–59. Harold W. Hobbs, Soil and Water Conservation Research Division, Agricultural Research Service, USDA Miscellaneous Publication No. 945, 672 pp. 1963. (Includes monthly precipitation and runoff from 157 watersheds, including 45 newly established watersheds for which data had not been previously published; annual maximum discharges and annual maximum volumes for 1 hour to 8 days for 142 watersheds; and one or more typical selected runoff events for 134 watersheds. The publication presents watershed maps, when new or revised, and graphs of each selected event, together with tabular data. Locations of experimental studies are shown on U.S. fold-in map of land resource areas in 48 States.)

Reference 5.—HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960–61. Harold W. Hobbs and Florence B. Crammatte, Soil and Water Conservation Research Division, Agricultural Research Service, USDA Miscellaneous Publication No. 994, 496 pp. 1965. (Contains monthly precipitation and runoff from 160 watersheds, including 24 newly established watersheds for which data had not been previously published; annual maximum discharges and annual maximum volumes for 1 hour to 8 days for 145 watersheds; and one or more typical selected runoff events for 133 watersheds. The publication presents watershed maps, when new or revised, and graphs of each selected event, together with corresponding tabular data. Table 4 gives a listing of selected runoff events published through 1961, for each watershed.)

Reference 6.—HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962. Harold W. Hobbs, Soil and Water Conservation Research Division, Agricultural Research Service, USDA Miscellaneous Publication No. 1070, 447 pp. 1968. (Contains monthly precipitation and runoff from 164 watersheds, including 13 watersheds for which data had not been previously published; annual maximum discharges and annual maximum volumes for 1 hour to 8 days for 155 watersheds; and one or more typical selected runoff events, presented in both tabular and graphical forms for 136 watersheds. Selected runoff events published through 1962 for each of the watersheds are listed in table 4. Several watershed maps, either new or revised, are presented.)

The above six publications have been furnished to the Soil Conservation Service and to other governmental agencies—Federal, State, and local. They have also been distributed to State agricultural experiment stations, university libraries and engineering departments, and, when requested, to private engineers and individuals. Distribution has also been made to similar foreign institutions and individuals.

FORM OF DATA PRESENTATION

The data in this volume are presented for each watershed in the following order: (1) watershed description, if not previously published; (2) monthly precipitation and runoff; (3) average monthly precipitation and runoff for period of record; (4) local mean monthly precipitation (previously called normal P in publications through 1961); (5) annual maximum flows; (6) daily temperature extremes, daily precipitation, and discharge for some watersheds; (7) tabulations of data for selected runoff events; (8) graphs of selected runoff events; (9) watershed maps, if not previously published or if revised; and (10) isohyetal maps (in some cases) of storm rainfall distribution for selected runoff events.

Continuing watersheds

For current watersheds, for which the descriptive information has been published in *References 1, 4, 5, or 6*, the tabular data pre-

sentation begins at the top of the first page. Above the border at the center, the numerical page number is given, and the decimal page number is shown at the bottom.

In the space to the right of the first table title MONTHLY PRECIPITATION AND RUNOFF (inches), the location *name*, watershed *number* (or designation), and watershed *size* are given. In the table, for the current *calendar* year, the *precipitation* (P) in inches is listed in the monthly columns, with the yearly total given in the last column headed *annual*. In the line below, the corresponding *runoff* (Q) in inches is similarly listed for each month and the total for the year. Underneath, in two lines, are given the (P) and (Q) station average, (STA AVG) by months with annual total for the period of record. On the bottom line of the table are given the long-term monthly and annual precipitation means (averages) for the nearest U.S. Weather Bureau Station.

In the second table, entitled ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES OR SELECTED TIME INTERVALS, data are also given for the *calendar* year listed in the first column. Under the *maximum discharge* heading, the date column shows the day and month the instantaneous peak rate in inches per hour occurred. In computing the rate, corrections were made for any significant pondage above the runoff measuring device. Under the *maximum volume* heading, the date refers to the day and month on which the interval began; for example, if the interval began on August 30 at 2359, the entry in the date column will be 8-30. The depths for 1 hour to 8 days are the annual maximum values recorded, without regard to whole clock hours or days; thus, if the 6-hour interval began at 1332, the interval would end exactly 6 hours later at 1932. The volume given is in inches of average depth over the watershed for each of the seven selected time intervals (1, 2, 6, and 12 hours, and 1, 2, and 8 days). In the last section of the table the maximum discharges and depths for the various time periods are given under MAXIMUMS FOR PERIOD OF RECORD.

Notes and footnotes in explanation of the data, given below the first two tables, include (1) a general statement as to watershed condi-

tions and other physical changes for the period covered; (2) corrections or revisions for previously reported data; (3) source of long-term precipitation means or averages and years covered; and (4) other pertinent material or explanations of the hydologic data in the two tables.

In previous volumes, statements of the estimated quality of P and Q records were given first in these notes. Beginning with this 1963 volume, no quality statements are given *if* the records are considered to be *excellent* (accurate within 5 percent). However, *if* they are judged to be less than excellent, such as *good* (within 10 percent), *fair* (within 15 percent), or *poor* (more than 15 percent in error), an accuracy statement is placed ahead of the general statement on watershed conditions. In case daily tables are used, the accuracy statement is given as a general footnote to such tables. Re-evaluations of previously published records are underway for several watersheds and explanations of their status are also given in these footnotes.

For some watersheds, tables of DAILY AIR TEMPERATURE (Maximum and minimum in degrees Fahrenheit), DAILY PRECIPITATION (inches), and DAILY DISCHARGE (cfs) are given next, with appropriate footnotes in explanation of the data at the end of each table. The multiplier to convert mean daily discharge in cubic feet per second to inches per day is given as first note to the daily discharge table. The conversion factor for daily inches to acre-feet is sometimes given.

If no daily tables are given, the tabular data for SELECTED RUNOFF EVENTS begin in the remaining space on the first page and then are carried forward on continuation sheets (or pages) until completed. One to nine storm runoff events were chosen, from data available, for presentation. In general, the *selected runoff events* were those in which runoff was produced by a relatively uniform rainfall excess of short duration. The information for each event includes tabulation of (1) *antecedent* daily rainfall and runoff for 30 days before the event or reference made to daily tables, if used; (2) rainfall *intensities* and *accumulated amounts* for the event; (3) runoff *rates* and *accumulated amounts* for the event; and (4) specific

watershed conditions at the time of the event. Simple graphs of the rates of rainfall and runoff are shown for all events on pages following the tabular data.¹ Maps follow the graphs unless previously published in *References* 3, 4, 5, or 6, or if they were shown herein on the map of another watershed. Isohyetal maps, if any, generally follow the regular maps.

In the "Notes" space at the bottom of the first page for runoff events, the multiplier to convert runoff rates in inches per hour to cubic feet per second, or vice versa, is given, followed by references to maps, if required, and explanatory notes or footnotes relating to the tabular data. Below the bottom border and above the first index page number, the cooperating agencies are listed. The notes on continuation pages contain the statement on the multiplier and similar explanations of the data on each page.

New watersheds

For the 9 watersheds installed in recent years that have not been reported previously, the presentation begins with the watershed description in the upper part of the first page. The explanations and definitions upon which the description is based are given in the next section.

The first line, centered at the top of the sheet, gives the *project location*, which is the nearest city or town, and the *number* or *name* of the watershed as used locally. The descriptive material is then given under the 12 major topics listed generally down the left side of the sheet: *Location, Area, Slopes, Soils, Erosion, Land Capability, Geology, Surface Drainage, Character of Flow, Instrumentation, Watershed Conditions, and Generally Represents.*

After this description, the tabular data are then summarized in the first two tables and notes as previously described for "Continuing Watersheds." The tabular data for daily air temperatures, precipitation, and discharge, if presented, precede the tabular data for SE-

LECTED RUNOFF EVENTS. The rest of the material of the series for the particular watershed follows in the same order as previously indicated.

WATERSHED DESCRIPTIONS

The following definitions and explanations were used in describing watershed location, watershed characteristics, instrumentation, land management, and recommended area of application of the hydrologic data.

LOCATION gives county and State, distance and direction of the runoff gaging station from the nearest city or town, and the major river basin in which it lies. When two or more basins are involved, the tributary or subbasin is given first, followed by the major basin.

AREA of watershed is given in acres if under 640 acres, in both acres and square miles (in parentheses) if over 1 square mile. If areas are revised, additional values are given with notes on date of change.

SLOPES are given in terms of the ranges commonly used in soil survey work in the locality. The percentages of the watershed lying in each slope class are listed.

SOILS are described briefly, according to definitions from the U.S. Department of Agriculture SOIL SURVEY MANUAL, Agriculture Handbook 18, published in 1951. Soil descriptions were added for two and revised for 12 of the continuing watersheds and descriptions given for 8 new watersheds.

Soil texture refers to the relative proportions of the various size groups (or separates) of individual soil grains in a mass of soil. Specifically, it refers to the proportions of clay, silt, and sand below 2 millimeters in diameter. The various classes of texture in order of increasing percentages of the smaller size groups and decreasing percentages of the larger size groups are (1) sands, (2) loamy sands, (3) sandy loams, (4) loam, (5) silt loam, (6) silt, (7) sandy clay loam, (8) clay loam, (9) silty clay loam, (10) sandy clay, (11) silty clay, and (12) clay. In some of the descriptions, the broader classification of coarse, moderately coarse, medium, moderately fine, and fine has been used—the coarse soils are the sands and the fine soils the clays.

¹In some cases, noncritical points were eliminated from original tabulations to reduce the number of lines required in the tables for time, rates, and accumulations.

Soil structure refers to the aggregation of primary soil particles into compound particles, or clusters of primary particles, that are separated from adjoining aggregates by surfaces of weakness. Structure *grade*, or the durability of the aggregates when subjected to disturbance, is described as *structureless*, *weak*, *moderate*, or *strong*. In some cases, the structureless grade is described as *massive*, if coherent, or *single grain* if noncoherent. The *size* of the aggregates is described as *very fine*, *fine*, *medium*, *coarse*, or *very coarse*. Structure *shape* is described as being *platy*, *prismatic*, *columnar*, *angular blocky*, *subangular blocky*, *granular*, or *crumb*.

Permeability is the quality of a soil that enables it to transmit water or air. This quality is described by the terms *very slow*, *slow*, *moderately slow*, *moderate*, *moderately rapid*, *rapid*, or *very rapid*.

Internal soil drainage is the quality of a soil that permits the downward flow of excess water through it. Internal drainage is reflected in the frequency and duration of periods of saturation with water. It is determined by the texture, structure, and other characteristics of the soil profile and of underlying layers and by the height of the water table, either permanent or perched, in relation to the water added to the soil. *Internal drainage* is described as *none*, *very slow*, *slow*, *medium*, *rapid*, or *very rapid*.

EROSION conditions on the watershed are described in accordance with the following classification for water and wind erosion, also briefed from Agriculture Handbook 18. The percentage of the watershed in the following erosion classes is given.

Class 1.—The soil has a few rills or places with thin A horizons that give evidence of accelerated erosion, but not to an extent to alter greatly the thickness and character of the A horizon. Except for soils having very thin A horizons (less than 8 inches), the surface soil consists entirely of A horizon throughout nearly all of the delineated areas. Up to about 25 percent of the original A horizon, or original plowed layer in soils with thin A horizons, has been removed from most of the area. This class also includes the areas of no erosion.

Class 2.—The soil has been eroded to the extent that ordinary tillage implements reach

through the remaining A horizon or well below the depth of the original plowed layer in soils with thin A horizons. Generally, the plow layer consists of a mixture of the original A horizon and the underlying horizons. Mapped areas of eroded soil usually have patches in which the plow layer consists wholly of the original A horizon and others in which it consists wholly of underlying horizons. Shallow gullies may be present. Approximately 25 to 75 percent of the original A horizon or surface soil may have been lost from most of the area.

Class 3.—The soil has been eroded to the extent that all or practically all of the original surface soil, or A horizon, has been removed. The plow layer consists essentially of materials from the B or other underlying horizons. Patches in which the plow layer is a mixture of the original A horizon and the B horizon or other underlying horizons may be included within mapped areas. Shallow gullies, or a few deep ones, are common in some soil types. More than about 75 percent of the original surface soil, or A horizon, and commonly part or all of the B horizon or other underlying horizons has been lost from most of the area.

Class 4.—The land has been eroded until it has an intricate pattern of moderately deep or deep gullies. Soil profiles have been destroyed except in small areas between the gullies. Such land is not useful for crops in its present condition. Reclamation for crop production or for improved pasture is difficult, but may be practicable if other characteristics of the soil are favorable and erosion can be controlled.

Class +.—Recent alluvial and colluvial deposition.

LAND CAPABILITY is given as classified by Klingebiel and Montgomery in U.S. Department of Agriculture LAND-CAPABILITY CLASSIFICATION, Agriculture Handbook 210, published in 1961. The classification expresses the suitability of land for use without deterioration. The eight land-capability classes are distinguished according to the risk of land damage or difficulty of land use. The following classes I to IV are suitable for cultivation and other uses, whereas classes V to VIII are not suitable for cultivation.

Class I.—Very good land for cultivation; nearly level and productive; not subject to ero-

sion; needs only ordinary good farming methods.

Class II.—Good land for cultivation; mostly gently sloping; not more than moderately subject to erosion; some land may be rather wet; can be farmed safely with easily applied practices.

Class III.—Moderately good land for cultivation; mostly moderately sloping; some area too wet or too dry; can be farmed safely with practical conservation measures, carefully applied; usually a combination of two or more measures is needed.

Class IV.—Fairly good land, suitable for occasional cultivation; generally strongly sloping; often shallow or very sandy; often found in dry climate.

Class V.—Land very well suited for grazing or forestry; requires good range or woodland management.

Class VI.—Land well suited for grazing or forestry; steeply sloping land, stony or shallow soil, eroded land, droughty land, or wet land; requires careful management.

Class VII.—Land fairly well suited for grazing or forestry; severely limited in use by such factors as very steep slope, shallow or droughty soil, wetness, severe erosion, or excessive salinity; requires very careful management.

Class VIII.—Land not suitable for cultivation, grazing, or forestry; may be useful for wildlife, recreation, or protection of water supplies.

GEOLOGY of the 9 new watersheds is described herein, together with that of 46 of the old "Continuing Watersheds." A brief description of the portion of the watershed occupied by various geological formations or series is given, together with strike and dip of the strata, thickness, and relative position, when known. Faults, perched water tables, outcrops, if present, and other details that relate to the movement of water within the drainage area or that affect the hydrology of the watershed are described.

SURFACE DRAINAGE refers to the ease with which excess water flows from the watershed area. The length of principal waterway is the distance from the gaging station to the most remote point on the watershed boundary, mea-

sured along the flood plain of the watercourse.

CHARACTER OF FLOW describes the flow of the principal watercourse with respect to permanence and space. The following definitions are from Meinzer's OUTLINE OF GROUND-WATER HYDROLOGY, U.S. Geological Survey Water-Supply Paper 494, published in 1923.

With respect to permanence, streams may be divided into perennial streams, intermittent streams, and ephemeral streams.

A *perennial stream*, or stretch of a stream, is one that flows continuously. Perennial streams are generally fed in part by springs, and their upper surfaces generally stand lower than the water table in the localities through which they flow.

Intermittent streams may be divided, with respect to the source of their water, into spring-fed intermittent streams and surface-fed intermittent streams. They also flow in direct response to precipitation.

A *spring-fed intermittent stream*, or stretch of a stream, is one that flows only at certain times when it receives water from springs. The intermittent character of streams of this type is generally caused by fluctuations of the water table whereby the stream channels stand part of the time below and part of the time above the water table. This is the ordinary type of intermittent stream.

A *surface-fed intermittent stream*, or stretch of a stream, is one that flows during protracted periods when it receives water from some surface source, generally the gradual and long-continued melting of snow in a mountainous or other cold tributary area. The term may be arbitrarily restricted to streams or stretches of streams that flow continuously during periods of at least 1 month.

An *ephemeral stream*, or stretch of a stream, is one that flows only in direct response to precipitation. It receives no water from springs and no long-continued supply from melting snow or other surface source. Its stream channel is at all times above the water table. The term may be arbitrarily restricted to streams or stretches of streams that do not flow continuously during periods of as much as 1 month.

With respect to continuity in space, streams may be divided into continuous streams and interrupted streams. An *interrupted stream* is

one that contains (1) perennial stretches with intervening intermittent or ephemeral stretches or (2) intermittent stretches with intervening ephemeral stretches. These two classes of interrupted streams are designated, respectively, *perennial interrupted streams* and *intermittent interrupted streams*. A *continuous stream* is one that does not have interruptions in space. It may be perennial, intermittent, or ephemeral, but it does not habitually have wet and dry stretches.

INSTRUMENTATION describes type of runoff control or measuring device, number and type of precipitation gages, type of charts used, and snow courses, if employed.

WATERSHED CONDITIONS describes the general use and farm, forest, or range practices prior to the period of record and the conservation measures, crops, yields, and general cultural operations and practices during the period of record. Rotation crops are listed in the order that they were grown. Operations are described with commonly used agricultural terms, and only those that appear to have a significant relationship to the hydrology of the watershed are mentioned.

GENERALLY REPRESENTS gives the broad area of application for which the data of the specific watershed are recommended. The land resource areas named are those delineated on the map "Location of Experimental Agricultural Watersheds of the Agricultural Research Service," presented on pages 12 and 13. Solid circles show the approximate locations of the "continuing" or "new" watersheds; open circles show approximate locations of studies which have been discontinued. In a few cases the circles show the project headquarters locations rather than the watershed locations. A larger index map, showing more detail was included in Reference 4 for 1956-59.

In some cases there is an apparent contradiction between the watershed location on the maps and the descriptive information given under "Generally Represents." This is due to the small scale of the maps; it is difficult to show many small local variations in boundaries of the land resource areas. The descriptive statements, rather than the map location, should be the guide to the application of the data.

STANDARD SYMBOLS FOR TABULAR DATA

The following capital letters have been used as standard symbols throughout volume to designate specific items or meanings:

A—precipitation of unknown time of occurrence, amount generally carried forward.

E—shows that a figure is estimated or partially estimated.

H—precipitation in the form of hail.

L—precipitation which is sleet or freezing rain.

M—mixed precipitation of rain, snow, and sleet.

N—precipitation in form of rain and snow.

NR—used in place of a figure to indicate "no record."

P—designates monthly or annual precipitation in inches.

Q—designates monthly or annual runoff in inches.

RG—designates rain gage, generally followed by gage number.

R—followed by hyphen and a number is recording rain gage.

S—followed by hyphen and a number is standard rain gage.

S—precipitation in form of snow.

STA AV (or AVG)—designates station average for period of record.

T—denotes a trace, generally less than 0.005 inch of precipitation and 0.01 inch of runoff (or 0.0001 inch of runoff, if 4 decimal places are used).

Time of day symbols or designations *a*, *p*, *m*, and *n* used in previous publications through 1961 have been dropped and Military Time (0001 to 2400) substituted for 1962 forward. Unless stated otherwise, time used in tables is Eastern, Central, Mountain, or Pacific Standard Time, whichever applies to the given location.

REVISIONS OF PREVIOUSLY PUBLISHED DATA

In some instances, it has been necessary to revise previously published data on specific watersheds. If the corrections involve changed values of monthly precipitation or runoff or annual maximum discharges or maximum vol-

umes for various durations, whole lines for the year are republished with the changed items *underlined*. These revisions are explained in footnotes following the tables in which they appear.

If additions or revisions are made to watershed descriptions, they are placed following the above-mentioned tables. In 46 cases, a statement on geology has been added to the original descriptions. The geology for the 9 new watersheds is described. In several cases, revised map pages have been inserted and labeled, for example: "(1956-59 Map) 25.1-8 (Revision)," and are placed immediately preceding the current 1963 sheets for the particular watershed. Pending re-evaluation of prior records, hydrologic data for 1963 have been withheld for the following 8 watersheds: W-II and IV at location 45, Safford, Ariz.; W-I at location 47, Albuquerque, N. Mex.; and W-1 through 5 at location 63, Tombstone, Ariz. Use of previously published records for these units should not be made until corrected data are available and complete revisions published.

All of the above changes are listed by States in table 3, page 16.

PERSONNEL RESPONSIBLE FOR COMPILATIONS

At each research location, many individuals have contributed to the planning and establishment of the watersheds and the collection, compilation, and analysis of the data. Some of those who made substantial contributions to the success of the research work behind this report are as follows:

<i>Location</i>	<i>Name or names</i>
8	William H. Speir, John C. Stephens
10	Aurelius P. Barnett
13, 66	James B. Burford, Jan C. Carr, Vernon O. Shanholtz
21, 25	Larry A. Kramer, Keith E. Saxton
26	Lloyd L. Harrold
29, 31, 32	Neal E. Minshall
34, 37	Wendell R. Gwinn, William O. Ree, Francis L. Wimberley
42	Ralph W. Baird, Walter G. Knisel

44	John A. Allis, Frank J. Dragoun
45, 47, 63, 64	Donald L. Chery, Orfelio Garcia
62	William A. Champion, Farris E. Dendy, W. Russell Hamon, Mary A. Marshall, Robert B. Wilson
65	Clayton Hanson, Armine R. Kuhlman, Carl R. Miller
67	George H. Comer, Martin L. Johnson
68	John M. Clark, Clifton W. Johnson
69	Bill B. Barnes, Donn G. Decoursey, Monroe A. Hartman

ADDITIONAL PUBLICATIONS BY LOCATION

In References 1, 4, 5 and 6 (see pp. 1 and 2), citations to other publications that presented watershed data and interpretations of results in various journals, bulletins, and periodicals are given at the end of the introductions for many of the locations. Following is a listing, by location number, of additional references to results that have been reported through 1963. Several items which apply in general to the overall program of hydrology, that could not be tied to a specific location, are listed at the end under General References.

8. *Vero Beach, Fla.*

HARRISON, D. S., SPEIR, W. H., and THOMAS, F. H.
1963. INSTALLATION AND OPERATION OF A SET OF WATERTABLE PLOTS ON AN ORGANIC SOIL. *Amer. Soc. Agr. Engin. Trans.* 6(1): 3-5.

STEPHENS, J. C.

1963. CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL. *Fla. Agr. Expt. Sta. Sunshine State Agr. Res. Rpt.* 8(1): 160-161.

———BLACKBURN, R. D., SEAMAN, D. E., and WELDON, L. W.

1963. FLOW RETARDANCE BY CHANNEL WEEDS AND THEIR CONTROL. *Amer. Soc. Civ. Engin. Proc., Irrig. Drain. Div. Jour.* 89(IR2): 31-53.

——— and STEWART, E. H.

1963. A COMPARISON OF PROCEDURES FOR COMPUTING EVAPORATION AND EVAPOTRANSPIRATION. *Internatl. Union Geodesy Geophys. No. 62, 13th. Gen. Assembly, Berkeley, Calif., Proc.* 1963, 7: 123-133.

- WEAVER, H. A., and STEPHENS, J. C.
1963. RELATION OF EVAPORATION TO POTENTIAL EVAPOTRANSPIRATION. *Amer. Soc. Agr. Engin. Trans.* 6(1): 55-56.
13. *Blacksburg, Va.*
BURFORD, J. B., and LILLARD, J. H.
1963. HIGH-ACCURACY STREAMFLOW MEASUREMENT WITH LOW-COST INSTALLATIONS. *Amer. Soc. Agr. Engin. Trans.* 6(4): 276-278.
- JONES, J. N., and BURFORD, J. B.
1963. SOIL, LAND, AND WATER; FIELD CROPS AND WOODLANDS. *Va. Agr. Expt. Sta. "Agricultural Progress" Res. Rpt.* 75: 4-6 and 7-8.
26. *Coshocton, Ohio.*
DREIBELBIS, F. R.
1963. LAND USE AND SOIL TYPE EFFECTS ON THE SOIL MOISTURE REGIMEN IN LYSIMETERS AND SMALL WATERSHEDS. *Soil Sci. Soc. Amer. Proc.* 27(4): 455-460.
- HARROLD, L. L., MARSTON, R. B., and SCHWAB, G. O.
1963. WATER CONSERVATION RESEARCH IN OHIO. *Ohio Jour. Sci.* 63(2): 49-55.
- MCGUINNESS, J. L.
1963. ACCURACY OF ESTIMATING WATERSHED MEAN RAINFALL. *Jour. Geophys. Res.* 68(16): 4763-4767.
42. *Riesel (Waco), Tex.*
KNISEL, W. G., JR.
1963. BASEFLOW RECESSON ANALYSIS FOR COMPARISON OF DRAINAGE BASINS AND GEOLOGY. *Jour. Geophys. Res.* 68(12): 3649-3653.
44. *Hastings, Nebr.*
ALLIS, J. A., HARRIS, B., and SHARP, A. L.
1963. A COMPARISON OF PERFORMANCE OF FIVE RAIN GAGE INSTALLATIONS. *Jour. Geophys. Res.* 68(16): 4723-4729.
62. *Oxford, Miss.*
ASMUSSEN, L. E., and DENDY, F. E.
1963. A REPORT ON GEOLOGICAL AND GROUND-WATER INVESTIGATIONS IN PIGEON ROOST CREEK WATERSHED, MARSHALL COUNTY, MISSISSIPPI. *Southeastern Geology* 5(1): 21 pp.
- DENDY, F. E., and ASMUSSEN, L. E.
1963. PERMEABILITY MEASUREMENTS WITH SMALL WELL POINTS. *Amer. Soc. Agr. Engin. Trans.* 6(4): 297-300, 303.
- HAMON, W. R.
1963. COMPUTATION OF DIRECT RUNOFF AMOUNTS FROM STORM RAINFALL. *Internatl. Union Geodesy Geophys. No.* 62, 52-62.
- MCHENRY, J. R.
1963. A TWO-PROBE NUCLEAR DEVICE FOR DETERMINING THE DENSITY OF SEDIMENTS. *Internatl. Assoc. Sci. Hydrol.* 65: 189-202.
1963. THEORY AND APPLICATION OF NEUTRON SCATTERING IN THE MEASUREMENT OF SOIL MOISTURE. *Soil Sci.* 95: 294-307.
63. *Tombstone, Ariz.*
KEPPEL, R. V., and GARDNER, J. L.
1963. WALNUT GULCH EXPERIMENTAL WATERSHED, SOUTHWEST WATERSHED RESEARCH CENTER. *Ariz. Agr. Expt. Sta. Brochure*, 12 pp.
- OSBORN, H. B., and REYNOLDS, W. N.
1963. CONVECTIVE STORM PATTERNS IN THE SOUTHWEST UNITED STATES. *Internatl. Assoc. Sci. Hydrol. B.* 8(3): 71-83.
- KEPPEL, R. V., and RENARD, K. G.
1963. FIELD PERFORMANCE OF LARGE CRITICAL-DEPTH FLUMES FOR MEASURING RUNOFF FROM SEMIARID RANGELANDS. *U.S. Dept. Agr. ARS* 41-69, 14 pp.
64. *Santa Rosa, N. Mex.*
KEPPEL, R. V.
1963. A RECORD STORM EVENT ON THE ALAMOGORDO CREEK WATERSHED IN EASTERN NEW MEXICO. *Jour. Geophys. Res.* 68(16), 3 pp.
67. *North Danville, Vt.*
JOHNSON, M. L.
1963. A COMPARISON OF SNOWMELT HYDROGRAPHS. *Eastern Snow Conf. Proc.*: 149-168.
68. *Boise, Idaho*
NEFF, E. L.
1963. NORTHWEST WATERSHED RESEARCH CENTER: REYNOLDS CREEK EXPERIMENTAL WATERSHED. *Idaho State Reclamation Assoc., Inc. Newsletter*, 2 pp.
69. *Chickasha, Okla.*
HARTMAN, M. A., and REE, W. O.
1963. STUDY DOWNSTREAM EFFECTS OF UPSTREAM WATERSHED IMPROVEMENTS. *USDA Soil Conser.* 28(9): 206-207.
- General References*
COOPER, C. F.
1963. INVESTIGATIONAL METHODS IN FOREST HYDROLOGY. *Australian Forestry* 27(2): 93-105.
- HARROLD, L. L.
1963. WATER INTAKE BY SOIL EXPERIMENTS FOR HIGH SCHOOL STUDENTS. *U.S. Dept. Agr. Misc. Pub.* 925: 10 pp.
- HERSHFIELD, D. M.
1963. PRECIPITATION. *Amer. Geophys. Union Trans.* 44(2): 553-555.
1963. DISCUSSION. EXTREME RAINFALL RELATIONSHIPS. *Amer. Soc. Civil Engin. Proc., Hydraul. Div. Jour.* 89(HY4): 241-243.
- HOLTAN, H. N., and OVERTON, D. E.
1963. ANALYSES AND APPLICATION OF SIMPLE HYDROGRAPHS. *Jour. of Hydrol.* 1(3): 250-264.

KELLY, L. L.

1963. ELECTRONIC COMPUTERS IN WATERSHED ENGINEERING RESEARCH. Amer. Soc. Civ. Engin. Proc. 89(IR3): 37-43.

LAWLESS, G. P., MACGILLIVRAY, N. A., and NIXON, P. R.

1963. SOIL MOISTURE INTERFACE EFFECTS UPON READINGS OF NEUTRON MOISTURE PROBES. Soil Sci. Soc. Amer. Proc. 27(5): 502-507.

LIBBY, F. J., and NIXON, P. B.

1963. A PORTABLE LYSIMETER ADAPTABLE TO A WIDE RANGE OF SITE CONDITIONS. Internatl. Assoc. Sci. Hydrol. 62: 153-158.

MYERS, L. E.

1963. WATER CONSERVATION: A RESEARCH CHALLENGE. Jour. of Soil and Water Conserv. 18(1), Jan.-Feb. 1963.

NEFF, E. L.

1963. PLOTTING POSITIONS FOR LOGARITHMIC-NORMAL FREQUENCY STUDIES. U.S. Dept. Agr. ARS 41-77: 12 pp.

NIXON, P. R., MACGILLIVRAY, N. A., and LAWLESS, G. P.

1963. EVAPOTRANSPIRATION-CLIMATE COMPARISONS IN COASTAL FOGBELT, COASTAL VALLEY, AND INTERIOR VALLEY LOCATIONS IN CALIFORNIA. Internatl. Union Geodesy Geophys. No. 62, 13th Gen. Assembly, Berkeley, Calif., Proc. 1963, 7: 221-231.

OSBORN, H. B.

1963. USE OF CHART READERS FOR ANALOG TO DIGITAL CONVERSION OF HYDROLOGIC DATA. U.S. Dept. Agr. ARS 41-81: 12 pp.

VAN BAVEL, C. H. M., NIXON, P. R., and HAUSER, V. L.

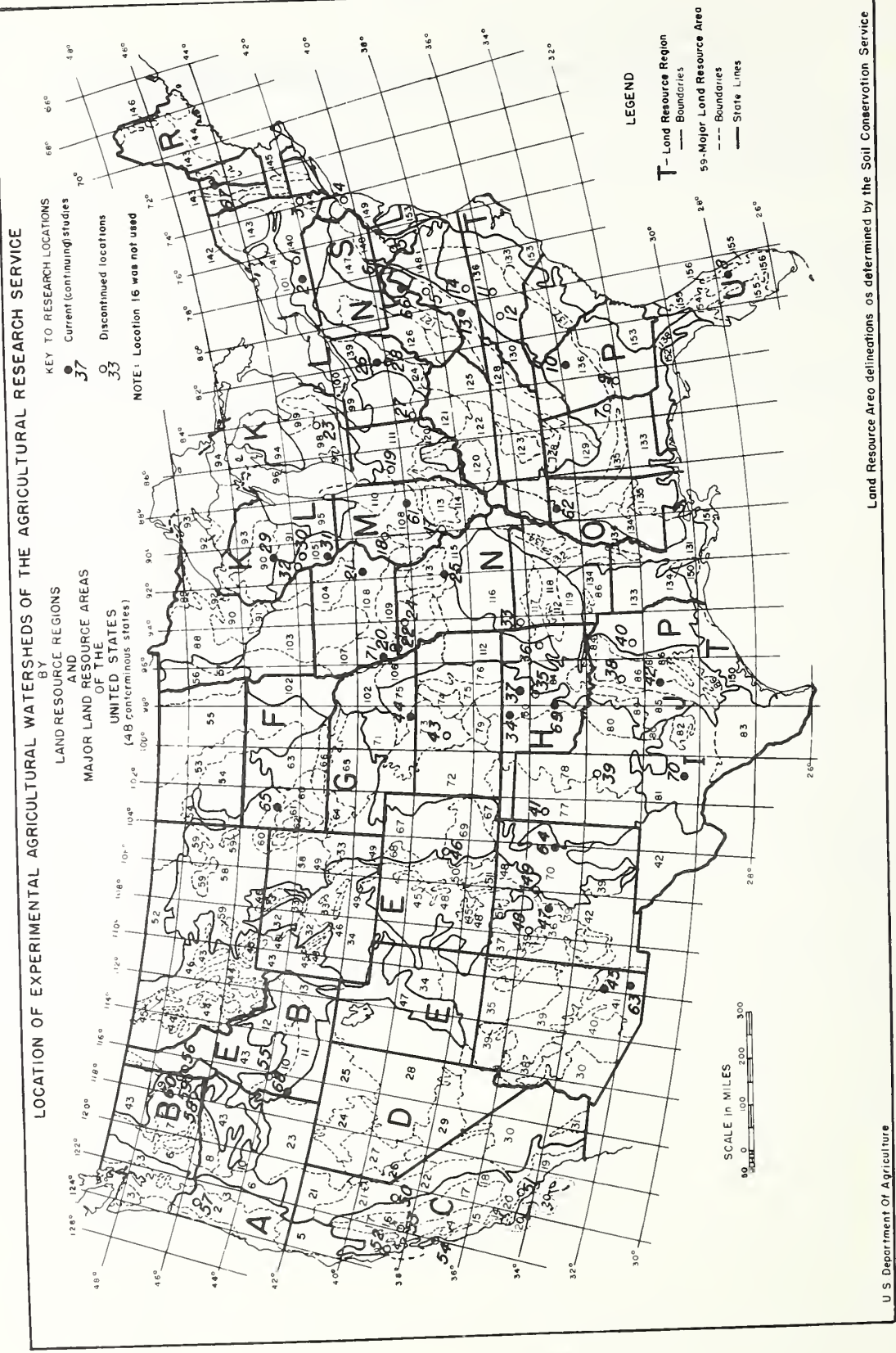
1963. SOIL MOISTURE MEASUREMENTS WITH THE NEUTRON METHOD. U.S. Dept. Agr. ARS 41-70: 39 pp.

WHELAN, D. E., and BRITT, C. S.

1963. SILT IN SUBURBIA. Soil Conserv. Soc. American. Proc. 263-270.

UNITED STATES INDEX MAP AND RELATED DATA

[Pages 12 through 17]



Land Resource Area delineations as determined by the Soil Conservation Service

LEGEND FOR LAND RESOURCE REGIONS AND MAJOR LAND RESOURCE AREAS (of the 48 states)

A

NORTHWESTERN FOREST, FORAGE, AND SPECIALTY CROP REGION

- 1 Northern Pacific Coast Range and Valleys
- 2 Willamette and Puget Sound Valleys
- 3 Olympic and Western Slope Cascade Mountains
- 4 California Coastal Redwood Belt
- 5 Siskiyou-Trinity Area

B

NORTHWESTERN WHEAT, RANGE, AND RANGE REGION

- 6 Eastern Slope Cascade Mountains
- 7 Columbia Basin
- 8 Palouse and Nez-Perce Prairies
- 9 Upper Snake River Lava Plains and Hills
- 10 Snake River Plains
- 11 Lost River Valleys and Mountains
- 12 Snake River Plateaus
- 13 Eastern Idaho Plateaus

C

CALIFORNIA SUBTROPICAL FRUIT, TRUCK AND SPECIALTY CROP REGION

- 14 Central California Valleys
- 15 Central California Coast Range
- 16 California Delta
- 17 Sacramento and San Joaquin Valleys
- 18 Sierra Nevada Foothills
- 19 Southern California Coastal Plain
- 20 Southern California Mountains

D

WESTERN RANGE AND IRRIGATED REGION

- 21 Klamath and Shasta Valleys and Basins
- 22 Sierra Nevada Range
- 23 Malheur High Plateau
- 24 Humboldt Area
- 25 Owyhee High Plateau
- 26 Carson Basin and Mountains
- 27 Fallon-Lovelock Area
- 28 Great Salt Lake Area
- 29 Southern Nevada Basin and Range
- 30 Colorado Plateau and Range
- 31 Imperial Valley
- 32 Northern Intermountain Desertic Basins
- 33 Semiarid Rocky Mountains
- 34 Central Desertic Basins, Mountains and Plateaus
- 35 (See E below)

E

- 36 New Mexico and Arizona Plateaus and Mesas
- 37 San Juan River Valley Mesas and Plateaus
- 38 Rio Grande and Colorado Plateaus
- 39 Arizona and New Mexico Mountains
- 40 Central Arizona Basin and Range
- 41 Southeastern Arizona Basin and Range
- 42 Southern Desertic Basins, Plains and Mountains

F

ROCKY MOUNTAIN RANGE AND FOREST REGION

- 43 Northern Rocky Mountains
- 44 Northern Rocky Mountain Valleys
- 45 Wind River and Teton Plateaus and Ranges
- 46 Northern Rocky Mountain Foothills
- 47 Waatch and Uinta Mountains
- 48 Southern Rocky Mountains
- 49 Southern Rocky Mountain Foothills
- 50 San Luis Valley
- 51 High Intermountain Valleys

Information from SCS, State, and other Offices

Compiled by Morris E. Austin

NORTHERN GREAT PLAINS SPRING WHEAT REGION

- 52 Brown Glaciated Plain
- 53 Dark Brown Glaciated Plain
- 54 Rolling Soft Shale Plain
- 55 Black Glaciated Plain
- 56 Red River Valley of the North
- 57 Western Minnesota Forest-Prairie Transition

WESTERN GREAT PLAINS RANGELAND AND IRRIGATED REGION

- 58 Northern Rolling High Plains
- 59 Northern Smooth High Plains
- 60 Pierre Shale Plains and Badlands
- 61 Black Hills Foothills
- 62 Black Hills
- 63 Rolling Pierre Shale Plains
- 64 Nebraska Sand Hills
- 65 Nebraska Sand Hills
- 66 Dakota-Nebraska Eroded Tableland
- 67 Central High Plains
- 68 Irrigated Upper Platte River Valley
- 69 Upper Arkansas Valley Rolling Plains
- 70 Pecos-Canadian Plains and Valleys

CENTRAL GREAT PLAINS WINTER WHEAT AND RANGE REGION

- 71 Central Nebraska Loess Hills
- 72 Central High Tableland
- 73 Rolling Plains and Breaks
- 74 Central Kansas Sandstone Hills
- 75 Central Loess Plains
- 76 Bluestem Hills
- 77 Southern High Plains
- 78 Central Rolling Red Plains
- 79 Great Bend Sand Hills
- 80 Central Rolling Red Prairies

SOUTHWESTERN PRAIRIES, RANGE, AND COTTON REGION

- 81 Edwards Plateau
- 82 Texas Central Basin
- 83 Rio Grande Plain
- 84 Cross Timbers
- 85 Great Plains
- 86 Texas Blackland Prairie
- 87 Texas Claypan Area

NORTHERN LAKE STATES FOREST AND FORAGE REGION

- 88 Northern Minnesota Swamps and Lakes
- 89 Minnesota Rockland Hills
- 90 Central Wisconsin and Minnesota Thin Loess and Till
- 91 Wisconsin and Minnesota Sandy Outwash
- 92 Superior Lake Plain
- 93 Northern Wisconsin and Wisconsin Stony, Sandy and Rocky Plains and Hills
- 94 Northern Michigan Sandy Drift

LAKE STATES FRUIT, TRUCK, AND DAIRY REGION

- 95 Southeastern Wisconsin Drift Plain
- 96 Western Michigan Fruit Belt
- 97 Southwestern Michigan Fruit and Truck Belt
- 98 Southern Michigan Drift Plain
- 99 Erie-Muron Lake Plain
- 100 Erie-Muron Lake Plain
- 101 Ontario-Mohawk Plain

CENTRAL FEED GRAINS AND LIVESTOCK REGION

- 102 Loess, Till, and Sandy Prairies
- 103 Central Iowa and Minnesota Till Prairies
- 104 Eastern Iowa and Minnesota Till Prairies

FLORIDA SUBTROPICAL FRUIT, TRUCK CROP AND RANGE REGION

- 154 South Central Florida Ridge
- 155 Southern Florida Flatwoods
- 156 Florida Everglades and Associated Areas

(continued)

- 105 Northern Mississippi Valley Loess Hills
- 106 Nebraska and Kansas Loess-Drift Hills
- 107 Iowa and Missouri Loess-Drift Hills
- 108 Illinois and Iowa Deep Loess Hills
- 109 North and West Central Till Plains
- 110 Northern Illinois and Indiana Heavy Till Plain
- 111 Indiana and Ohio Till Plain
- 112 Cherokee Prairies
- 113 Central Claypan Area
- 114 Southern Illinois and Indiana Thin Loess and Till Plain
- 115 Central Mississippi Valley Wooded Slopes

EAST AND CENTRAL GENERAL FARMING AND FOREST REGION

- 112 (See M Above)
- 116 Ozark Highland
- 117 Boston Mountains
- 118 Arkansas Valley and Ridges
- 119 Ouachita Mountains
- 120 Kentucky and Indiana Sandstone and Shale Hills and Valleys
- 121 Kentucky Bluegrass
- 122 Highland Rim and Pennyrival
- 123 Cumberland Plateau
- 124 Western Allegheny Plateau
- 125 Cumberland Plateau and Mountains
- 126 Central Allegheny Plateau
- 127 Eastern Allegheny Plateau and Mountains
- 128 Southern Appalachian Ridges and Valleys
- 129 Sand Mountain
- 130 Blue Ridge

MISSISSIPPI DELTA COTTON AND FEED GRAINS REGION

- 131 Southern Mississippi Valley Alluvium
- 132 Eastern Arkansas Prairies
- 134 (See P below)

SOUTH ATLANTIC AND GULF SLOPE CASH CROP, FOREST, AND LIVESTOCK REGION

- 86 (See J Above)
- 133 Southern Coastal Plain
- 134 Southern Mississippi Valley Silty Uplands
- 135 Alabama and Mississippi Blackland Prairies
- 136 Southern Piedmont
- 137 Carolina and Georgia Sandhills
- 138 North Central Florida Ridge

NORTHEASTERN FORAGE AND FOREST REGION

- 139 Eastern Ohio Till Plain
- 140 Glaciated Allegheny Plateau and Catskill Mountains
- 141 Tughill Plateau
- 142 St. Lawrence-Champlain Plain
- 143 Northern New England
- 144 New England and Eastern New York Upland
- 145 Connecticut Valley
- 146 Arcotook Area

NORTHERN ATLANTIC SLOPE TRUCK, FRUIT, AND POULTRY REGION

- 147 Northern Appalachian Ridges and Valleys
- 148 Northern Piedmont
- 149 Northern Coastal Plain

ATLANTIC AND GULF COAST LOWLANDS, FOREST AND TRUCK CROP REGION

- 150 Gulf Coast Prairies
- 151 Gulf Coast Marsh
- 152 Gulf Coast Flatwoods
- 153 Atlantic Coast Flatwoods

FLORIDA SUBTROPICAL FRUIT, TRUCK CROP AND RANGE REGION

- 154 South Central Florida Ridge
- 155 Southern Florida Flatwoods
- 156 Florida Everglades and Associated Areas

TABLE 1.—Watersheds, listed by State, where observations were discontinued before January 1, 1963

[Hydrologic data were published in References 1 to 6, given on pages 1 and 2]

State	Locality	Major land resource area <u>1/</u>	Discontinued watershed units		
			Number	Record period <u>2/</u>	Location No.
Alabama.....	Auburn.....	P-133.....	1	1945-47.....	7
Arkansas.....	Bentonville.....	N-116.....	6	1933-47 (SE)....	33
California.....	Placerville.....	C-18.....	1	1936-44 (SE)....	50
	Santa Paula.....	C-19.....	9	1934-43.....	51
	Sebastopol.....	C-14.....	2	1936-43 (SE)....	52
	Vacaville.....	C-16.....	1	1936-42.....	53
	Watsonville.....	C-14.....	4	1938-42 (SE)....	54
Colorado.....	Colorado Springs.....	G-67.....	4	1938-46 (SE)....	46
Georgia.....	Americus.....	P-133.....	4	1938-43 (SE)....	9
Idaho.....	Emmett.....	B-10, B-11.....	2	1938-41 (SE)....	55
	Moscow.....	B-9.....	2	1937-42 (SE)....	56
Illinois.....	Edwardsville.....	M-113.....	4	1938-55 (SE)....	17
	Elmwood.....	M-108.....	12	1945-46.....	18
Indiana.....	Lafayette.....	M-110.....	20	1940-53 (SE)....	19
Iowa.....	Clarinda.....	M-107.....	5	1932-42.....	20
	Shenandoah.....	M-107.....	2	1934-40.....	22
Kansas.....	Hays.....	H-73.....	2	1932-47.....	43
Maryland.....	College Park.....	S-149.....	8	1939-54 (SE)....	5
	College Park.....	S-149.....	2	1940-62 (SE)....	5
	Hagerstown.....	S-147.....	2	1938-47 (SE)....	6
Michigan.....	East Lansing.....	L-98.....	3	1941-59 (SE)....	23
Missouri.....	Bethany.....	M-109.....	8	1932-42 (SE)....	24
Mississippi.....	Oxford.....	P-133, P-134....	1	1957-59 (SE)....	62
Nebraska.....	Hastings.....	H-71, H-73, H-75	15	1939-54 (SE)....	44
	Hastings.....	H-71, H-73, H-75	1	1939-61 (SE)....	44
New Jersey.....	Freehold.....	S-149.....	3	1938-43 (SE) <u>3/</u> ..	4
New Mexico.....	Mexican Springs.....	D-39.....	12	1937-42 (SE)....	48
	Santa Fe.....	G-70, E-48.....	3	1939-48 (SE)....	49
New York.....	Arnot Forest.....	R-140.....	2	1941-47.....	1
	Cohocton.....	R-140.....	2	1938-45 (SE)....	2
North Carolina.....	High Point.....	P-136.....	3	1934-58 (SE)....	11
	Statesville.....	P-136.....	2	1933-38.....	12
Ohio.....	Coshocton.....	N-124.....	4	1937-47 (SE)....	26
	Hamilton.....	M-111.....	4	1938-44 (SE)....	27
	Zanesville.....	N-124.....	3	1934-45.....	28
Oklahoma.....	Cherokee.....	H-80.....	9	1942-60 (SE)....	34
	Guthrie.....	J-84.....	11	1930-55 (SE) <u>4/</u> ..	35
	Muskogee.....	M-112.....	3	1938-47.....	36
Oregon.....	Newberg.....	A-2.....	4	1938-42 (SE)....	57
South Dakota.....	Newell.....	G-58, G-60.....	8	1958-61.....	65
Texas.....	Garland.....	J-86.....	3	1938-47.....	38
	Riesel (Waco).....	J-86.....	14	1937-43 (SE)....	42
	Spur.....	J-78.....	9	1927-45.....	39
	Tyler.....	P-133.....	4	1931-44 (SE)....	40
	Vega.....	H-77.....	2	1938-43 (SE)....	41
Virginia.....	Chatham (Danville).....	P-136.....	3	1938-48 (SE)....	14
	Staunton.....	N-128.....	3	1948-56 (SE)....	15
Washington.....	Dayton.....	B-9.....	1	1939-42.....	58
	Pullman <u>5/</u>	B-9.....	3	1934-40.....	59
	Pullman <u>6/</u>	B-9.....	8	1931-47 (SE)....	60
Wisconsin.....	Coon Valley.....	M-105.....	2	1934-40.....	30
	La Crosse.....	M-105.....	4	1933-54 <u>7/</u>	32

1/ See location map and legend, pages 12 and 13.2/ (SE) indicates locations where selected runoff events were published in References 3, 4, 5 and/or 6.3/ 1 watershed also operated during 1950-55.4/ Watersheds operated for varying periods of 12 to 23 yr.5/ SCS Demonstration Project.6/ Soil and Water Conservation Experiment Station.7/ 1 watershed discontinued in 1942, 2 in 1947.

TABLE 2.—Experimental agricultural watershed research locations under study for 1963 hydrologic data, by States

State	Locality	Major land resource area ^{1/}	Assigned location No.	Watershed units (number)	Events reported (number)	Pages (inclusive)
Arizona.....	Safford.....	D-41, D-42.....	45	<u>2/</u> 2	2	290-294
	Tombstone.....	D-41.....	63	<u>3/</u> 6	4	349-365
Florida.....	Vero Beach.....	U-155.....	8	4	4	20-31
Georgia.....	Watkinsville....	P-136.....	10	1	1	32-34
Idaho.....	Reynolds.....	D-23, D-25.....	68	<u>4/</u> 1	1	404-414
Illinois.....	Monticello <u>5/</u> ...	M-108.....	61	---	---	
Iowa.....	Iowa City.....	M-108.....	21	1	1	73-76
Mississippi.....	Oxford.....	P-133, P-134.....	62	17	17	301-348
Missouri.....	McCredie.....	M-113.....	25	2	12	77-95
Nebraska.....	Hastings.....	H-71, H-73, H-75...	44	<u>6/</u> 15	10	262-289
New Mexico.....	Albuquerque.....	D-42.....	47	<u>7/</u> 2	3	295-300
	Santa Rosa.....	G-70.....	64	1	0	366
New York.....	Cohocton <u>8/</u>	R-140.....	2	---	---	
Ohio.....	Coshocton.....	N-124.....	26	35	35	96-165
Oklahoma.....	Cherokee.....	H-80.....	34	6	18	194-216
	Chickasha.....	H-78, H-80, J-84...	69	<u>9/</u> 16	0	415-456
	Stillwater.....	H-80.....	37	3	3	217-223
South Dakota....	Newell.....	G-58, G-60.....	65	7	0	367-380
Texas.....	Riesel (Waco)...	J-86.....	42	20	16	224-261
Vermont.....	North Danville..	R-144.....	67	4	4	389-403
Virginia.....	Blacksburg.....	N-128, S-147, N-130, P-136, S-148.....	13	14	14	35-72
West Virginia....	Moorefield.....	N-128, S-147.....	66	4	4	381-388
Wisconsin.....	Colby.....	K-90.....	29	1	1	166,167
	Fennimore.....	M-105.....	31	4	16	168-189
	La Crosse.....	M-105.....	32	2	2	190-193

^{1/} See location map and legend, pages 12 and 13.

^{2/} Watersheds W-II and IV at Safford withheld for 1963, pending re-evaluation.

^{3/} Includes data on 1 new watershed, W-6, while precipitation and runoff data for 5 watersheds, W-1 through W-5 are withheld for 1963 pending re-evaluation.

^{4/} Includes data on 1 new watershed, W-1.

^{5/} Report deferred on the 2 watersheds.

^{6/} Includes data on 1 new watershed, 25-H.

^{7/} The drainage area for W-I is in question since 1945 and is larger than reported for 1946-62. Runoff records and selected events previously published should be disregarded until re-evaluation can be made and reported. W-II and W-III monthly precipitation and runoff not calculated. Data are being re-evaluated.

^{8/} Report deferred on 1 watershed, W-I

^{9/} Includes data on 6 new watersheds, 600, 110, 522, 512, 621 and 121.

TABLE 3.—List, by States, of additions or revisions made herein to data published prior to 1963

State	Locality	Location page No.	Nature of addition or revision <u>1/</u>
Arizona	Safford	45.1-1,45.4-1	GEOLOGY <u>added</u> for Watersheds W-I and V (Monthly P & Q and STA AV P & Q <u>withheld</u> pending re-evaluation). Watersheds W-II and IV at Safford <u>withheld</u> for 1963, pending re-evaluation.
		Tombstone 63.1-1	INSTRUMENTATION, WATERSHED CONDITIONS <u>revised</u> and GEOLOGY <u>added</u> for W-1.
		63.2-1	LOCATION, INSTRUMENTATION, WATERSHED CONDITIONS <u>revised</u> and AREA, GEOLOGY <u>added</u> for W-2.
		63.3-1	INSTRUMENTATION, WATERSHED CONDITIONS <u>revised</u> and LOCATION, AREA and GEOLOGY <u>added</u> for W-3.
		63.4-1	WATERSHED CONDITIONS <u>revised</u> and LOCATION, AREA, GEOLOGY and INSTRUMENTATION <u>added</u> for W-4.
		63.5-1	INSTRUMENTATION, WATERSHED CONDITIONS <u>revised</u> and LOCATION, AREA, SOILS and GEOLOGY <u>added</u> for W-5.
		63.1,2,3,4,5	No Monthly or Annual P and Q, Annual Maximum Discharge and Annual Maximum Volumes, or Selected Runoff Events are reported for 1963 and previously reported runoff data should be disregarded for W-1, W-2, W-3, W-4 and W-5.
		63.6-1 to 10	Data <u>added</u> for new Watershed W-6, beginning in 1962.
Georgia	Watkinsville	10.1-1	SOILS <u>revised</u> and GEOLOGY <u>added</u> .
Idaho	Reynolds	68.1-1 to 11	Data <u>added</u> for new W-1 watershed, beginning in 1963.
Iowa	Iowa City	21.1-1	SOILS and GENERALLY REPRESENTS <u>revised</u> and GEOLOGY <u>added</u> . AREA <u>revised</u> from 1926 to 1930 on more precise measurements. Conversion factor <u>changed</u> from 1942.04 (published in Ref.6) to 1946.08.
		21.1-4	Contour map <u>added</u> .
Missouri	McCredie	25.1-8	Topographic map (published in Ref. 4) <u>revised</u> for W-1.
		25.1-1	SLOPES, SOILS, EROSION, LAND CAPABILITY, SURFACE DRAINAGE, INSTRUMENTATION, WATERSHED CONDITIONS, GENERALLY REPRESENTS <u>revised</u> and GEOLOGY <u>added</u> .
		25.2-4	Topographic map (published in Ref. 4) <u>revised</u> for W-2.
		25.2-1	SLOPES, SOILS, EROSION, SURFACE DRAINAGE, INSTRUMENTATION, WATERSHED CONDITIONS and GENERALLY REPRESENTS <u>revised</u> and LAND CAPABILITY, GEOLOGY and CHARACTER OF FLOW <u>added</u> .
Nebraska	Hastings	44.11-1,44.26-2,	Revised Runoff(in/hr) scale on graphs for Watersheds 7-H
		44.27-2	(p.44.11-2), 22-H(p.44.26-2) and 23-H(p.44.27-2) published in Ref. 6 should be multiplied by 10.
		44.5-1	Aug. and annual total runoff for 1962 published in Ref. 6 <u>revised</u> .
		44.7-1	June, Sept. and annual total runoff for 1962 published in Ref. 6 <u>revised</u> .
		44.8-1	Max. Volume for 1-hr. published in Ref. 6 <u>revised</u> .
		44.27-1	Max. Discharge for 8-23-62 and Volumes for 1, 2, 6 and 12 hours and 1,2 and 8 days are revised and supersede those previously published in Ref. 6 (<u>underlined</u> items)
		44.29-1,2	Data for new watershed 25-H being presented for the first time.
New Mexico	Albuquerque	47.2-1,47.3-1	GEOLOGY, SLOPES, EROSION, LAND CAPABILITY and GENERALLY REPRESENTS <u>added</u> and SOILS <u>revised</u> for W-II and W-III. Monthly P & Q and STA AV P & Q not calculated, data is being re-evaluated for W-II and W-III. Watershed W-I <u>withheld</u> for 1963 drainage area is in question since 1945. Runoff records and selected events previously published (1946-62) for this period should be disregarded until re-evaluation is made.
Ohio	Coshocton	26.8-1	Map reference in Ref.6 for 1962 should have been to <u>revised</u> map on previous page 106(26.8-2) rather than to erroneous map in Ref.4(1956-59).
		26.35-1	Area shown for Watershed 95 Ref. 4 (1956-59, pp. 26.34-5 and 26.37-5) and Ref. 6 (1962, p. 26.37-2) <u>should</u> be 2570 acres instead of 2750.
		26.36-1	Volume for 12-hour maximum for period of record should have been 2.32 inches instead of 3.24 as shown in Ref. 6 (1962).
		26.39-1	Date of maximum discharge for period of record in Ref. 6 (1962) should have been 4-25-61 instead of 4-24-61.
		- - -	
Oklahoma	Cherokee	34.11-1,34.12-1	STA AV P (1960-62) <u>revised</u> for Aug. and Jan., respectively, also annual averages.
		34.14-1	STA AV Q (1960-61) <u>revised</u> for Sept., also annual average.
	Stillwater	37.1-1,37.2-1,	GENERALLY REPRESENTS <u>revised</u> and GEOLOGY <u>added</u> for all
		37.3-1	watersheds.

1/ References 1, 2 and 3 generally cover years 1924-55; Ref.4, 1956-59; Ref.5, 1960-61; Ref.6, 1962.

TABLE 3.—List, by States of additions or revisions made herein to data published prior to 1963—Continued

State	Locality	Location page No.	Nature of addition or revision <u>1/</u>
Oklahoma (Continued)	Chickasha	69.7-1,3	Watershed 700 near Alex., should have read at Alex in title boxes of 69.7-1,2,5 and 6 of Ref. 6 (1962).
		69.6-1-3	
		69.14-1-3	
		69.15-1-4	
		69.16-1-4	
		69.17-1-4	
Texas	Riesel(Waco)	69.18-1-4	
		42.2,3,4,6,7,8, 10,11,12,13,14, 15,16,17,24,28, 31,32,33,34	GENERALLY REPRESENTS <u>revised</u> for all watersheds and GEOLOGY description <u>added</u> . Composite maps from Ref.3 <u>revised</u> for W-1 and SW-17 and from Ref. 4 for W-2, W-6 and W-10.
Wisconsin	Fennimore	31.1-1 to 31.4-1	SLOPES, EROSION, LAND CAPABILITY, GEOLOGY, CHARACTER OF FLOW, WATERSHED CONDITIONS <u>added</u> and SOILS, SURFACE DRAINAGE, INSTRUMENTATION and GENERALLY REPRESENTS <u>revised</u> for the 4 watersheds.
		31.3-1	Monthly and Annual Q for March and December for Watershed W-3 <u>revised</u> for 1962.
	Colby	29.1-1	SLOPES, EROSION, LAND CAPABILITY <u>added</u> and SOILS, GEOLOGY, SURFACE DRAINAGE, INSTRUMENTATION, WATERSHED CONDITIONS, and GENERALLY REPRESENTS <u>revised</u> . Maximum Discharge rate for 9-13-62 published in Ref.6(1962) revised and correct value <u>underlined</u> .
	La Crosse	32.3-1,32.4-1	SLOPES, EROSION, LAND CAPABILITY, SURFACE DRAINAGE, CHARACTER OF FLOW, <u>added</u> and SOILS, GEOLOGY, INSTRUMENTATION, WATERSHED CONDITIONS and GENERALLY REPRESENTS <u>revised</u> .

1/ References 1, 2 and 3 generally cover years 1924-55; Ref. 4, 1956-59; and Ref. 5, 1960-61; and Ref. 6, 1962.

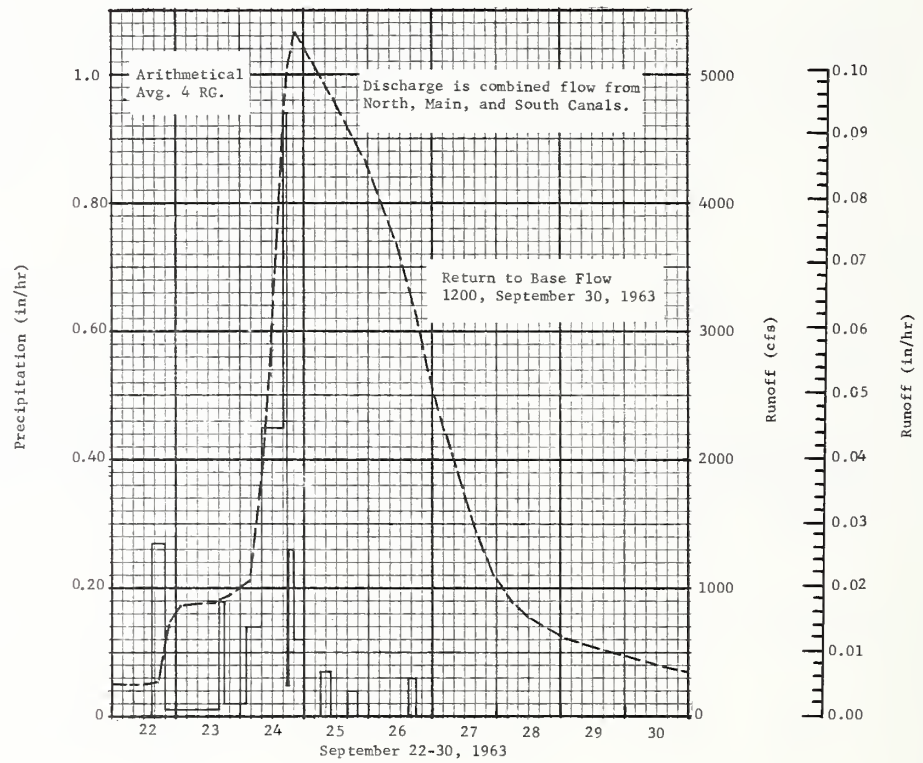


**WATERSHED DATA BY LOCATION NUMBER
AND
DECIMAL PAGING
[8.1-1 TO 69.18-4, A TOTAL OF 437 DATA SHEETS]**

For location by States and Land Resource Areas
and Regions, see U.S. Index Map page 12.

1/ MONTHLY PRECIPITATION AND RUNOFF (inches)						2/ VERO BEACH, FLORIDA (NORTH, MAIN & SOUTH CANALS) WATERSHED W-1 8.1 AREA—49,915 ACRES (78.0 SQ. MILES)										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P	.82	5.00	1.99	.62	3.34	6.09	4.40	4.56	16.22	6.05	4.24	4.34	57.67		
	Q	1.05	1.51	1.33	.85	1.06	1.66	1.68	1.61	10.08	5.09	2.57	1.94	30.43		
STA AV	P	2.19	2.64	3.72	3.92	3.60	5.96	5.45	5.80	8.73	6.12	2.39	1.43	51.95		
(51-63)	Q	1.36	1.23	1.82	1.51	1.27	2.19	1.84	1.83	4.33	4.13	1.70	1.22	24.43		
MEAN P	4/ 63 YR.	2.33	2.39	3.02	3.35	4.26	5.86	5.51	5.62	8.06	7.34	2.76	2.11	52.61		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-24	.106	9-24	.106	9-24	.211	9-24	.623	9-24	1.23	9-25	2.25	9-25	3.91	9-23	7.28
MAXIMUMS FOR PERIOD OF RECORD																
1951 TO	9-24	.106	9-24	.106	9-24	.211	9-24	.623	9-24	1.23	9-23	2.37	9-23	4.51	9-22	13.31
1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1960	1960	1960	1960	1960	1960	1960
NOTES: Watershed conditions: citrus groves, 40%; improved pasture, 32%; unimproved range and forest, 22%; urban development, 6%. 1/ Precipitation Thiessen weighted using 5 gages. 2/ Runoff data furnished by U.S. Geological Survey. Artesian irrigation inflow included in runoff. 3/ Precipitation and runoff records began April 1951. 4/ Mean P based on 63 yr. (1901-1963) U.S. Weather Bureau record period at Fort Pierce No. 1, Fla. Missing records for July 1933 and for Feb. 1950 estimated from nearby station.																
1963 DAILY PRECIPITATION (inches)						VERO BEACH, FLORIDA WATERSHED W-1 8.1										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.17	.00	.23	.10	.00	.00	.00	1.75	.00	.00				
2	.00	.00	.09	.00	.00	.00	.00	.08	.00	.55	.00	.00				
3	.00	.54	.00	.00	.52	.59	.15	.00	.09	.00	.00	.00				
4	.00	.57	.00	.00	.06	.02	.47	.31	.00	.17	.98	.00				
5	.00	.00	.04	.00	.00	.72	.05	.00	.30	.00	.72	.00				
6	.00	.00	.01	.00	.00	.00	.00	.00	1.59	.12	.00	.00				
7	.11	.00	.09	.08	.00	.00	.00	.00	.34	.00	.00	.00				
8	.04	.00	.00	.00	.00	.12	.00	.00	.84	.02	.00	.00				
9	.00	.00	.55	.00	.00	.23	.04	.73	.00	.61	.00	.00				
10	.00	.00	.00	.00	.00	.01	.00	.25	.00	.03	1.54	.00				
11	.00	.00	.00	.00	.00	.14	1.41	.27	.06	.13	.02	.00				
12	.00	1.06	.00	.00	.00	.00	.01	.00	.45	.44	.50	.00				
13	.00	.00	.00	.01	.00	.23	.00	.09	.00	.00	.00	.00				
14	.16	.00	.01	.00	.00	.71	.31	.16	.21	.68	.00	.03				
15	.00	.00	.00	.00	.00	.34	.00	.03	.19	.88	.00	.04				
16	.00	.52	.00	.00	.00	.16	.10	.00	.15	.50	.00	.48				
17	.20	.00	.00	.00	.00	.00	.00	.03	.43	.06	.00	1.09				
18	.00	.00	.00	.00	.00	.00	.00	.90	.07	.00	.00	.03				
19	.00	.86	.00	.00	.00	.06	.19	.32	1.97	.00	.00	.00				
20	.00	.00	.00	.00	.00	.00	.75	.22	.16	.00	.00	.00				
21	.04	.00	.00	.00	.10	.10	.00	.44	.01	.00	.00	.00				
22	.00	.00	.00	.00	.00	.00	.58	.68	1.42	.00	.00	.00				
23	.00	.03	.00	.00	.40	.15	.00	.00	.85	.11	.00	.34				
24	.00	.07	.00	.00	.06	.05	.01	.00	6.41	.00	.00	.00				
25	.00	.00	.00	.00	.07	.47	.00	.00	.51	.00	.09	.00				
26	.25	1.35	.00	.09	.03	.58	.03	.05	.17	.00	.31	.00				
27	.02	.00	.00	.00	.02	.64	.02	.00	.00	.00	.00	.00				
28	.00	.00	.04	.00	.37	.57	.00	.00	.00	.00	.00	.00				
29	.00	-----	.20	.00	.44	.10	.19	.00	.00	.00	.08	.00				
30	.00	-----	.79	.44	.94	.00	.00	.00	.00	.00	.00	1.07				
31	.00	-----	.00	-----	.10	-----	.09	.00	-----	.00	-----	1.26				
TOTAL	0.82	5.00	1.99	0.62	3.34	6.09	4.40	4.56	16.22	6.05	4.24	4.34				
STA AV	2.19	2.64	3.72	3.92	3.60	5.96	5.45	5.80	8.73	6.12	2.39	1.43				
NOTES: THIESSEN WEIGHTED RAINFALL USING 5 GAGES. STA AV COVERS PERIOD FROM JULY 1, 1951 THROUGH 1963.																

1963 MEAN DAILY DISCHARGE (cfs)						VERO BEACH, FLORIDA (MAIN, NORTH, SOUTH CANALS) WATERSHED W-1 8.1										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	61.2	57.1	135.0	101.9	84.2	99.8	104.0	112.0	46.4	545.0	87.0	36.0				
2	52.7	44.6	138.9	105.2	141.0	95.0	85.1	60.1	60.4	2,203.0	104.0	79.0				
3	52.3	45.4	120.5	62.6	147.6	69.2	64.3	82.1	84.4	987.0	101.0	98.8				
4	58.2	165.4	100.9	40.9	134.3	120.1	40.1	93.3	71.1	500.0	98.0	110.0				
5	60.0	130.6	92.9	46.5	116.2	312.0	157.0	103.9	67.8	359.0	137.0	118.8				
6	65.8	93.2	90.9	47.6	64.5	268.0	102.0	96.0	190.0	282.0	383.0	84.5				
7	105.8	72.0	91.5	54.3	33.9	56.8	53.0	66.7	669.0	241.0	284.0	73.5				
8	71.2	57.3	100.0	55.0	32.6	62.1	62.6	18.0	647.0	216.0	197.0	75.5				
9	64.2	45.5	99.5	58.3	32.3	76.3	60.9	26.0	452.0	278.0	107.0	69.0				
10	81.0	27.8	103.6	65.0	33.7	99.0	68.0	90.4	123.4	267.0	424.0	71.0				
11	69.6	84.3	134.9	58.9	34.5	49.7	255.0	94.4	167.0	233.0	684.0	98.0				
12	16.2	135.4	114.9	45.3	47.6	55.2	281.0	151.7	130.0	337.0	392.0	90.2				
13	66.9	153.3	94.1	43.3	45.0	77.7	190.8	55.7	159.0	276.0	338.0	86.2				
14	122.9	152.8	62.2	70.3	35.3	106.8	159.7	90.0	128.0	342.0	115.0	111.2				
15	71.2	49.5	59.2	47.7	20.3	99.7	162.7	91.4	127.4	349.0	98.0	117.2				
16	67.9	51.1	79.5	16.7	12.9	107.7	182.8	81.4	127.9	696.0	193.0	113.8				
17	69.8	88.1	91.2	33.4	12.8	105.0	155.0	66.6	149.8	551.0	161.0	195.0				
18	76.5	131.7	90.9	75.5	20.5	89.7	145.0	110.4	161.4	336.0	107.0	393.0				
19	74.6	137.9	75.2	64.1	48.5	52.4	109.0	67.4	170.9	245.0	93.0	136.0				
20	64.7	183.5	42.9	49.8	50.3	17.3	41.1	108.0	1,126.0	210.0	93.0	114.0				
21	103.1	141.4	23.0	47.1	54.6	30.9	115.3	198.0	445.0	170.0	93.0	145.0				
22	81.6	56.5	23.7	86.8	30.3	48.1	123.3	346.0	334.0	144.0	113.0	91.0				
23	34.2	45.2	34.2	60.6	16.6	54.6	213.0	451.0	885.0	181.0	119.0	92.0				
24	36.5	110.8	69.9	44.0	178.0	78.5	141.0	176.4	2,940.0	150.0	113.0	128.0				
25	19.9	137.0	103.9	62.1	122.7	72.5	87.9	102.8	4,780.0	107.0	104.0	112.0				
26	132.9	324.0	60.2	68.3	88.9	100.7	73.0	83.1	3,536.0	99.0	122.0	133.0				
27	170.6	324.3	40.2	71.2	57.5	451.0	72.2	92.1	1,694.0	115.0	176.0	80.0				
28	74.2	117.6	64.3	71.0	82.1	363.0	64.3	84.4	792.0	102.0	162.0	78.0				
29	49.2	-----	73.0	92.0	137.1	170.0	59.8	66.4	507.0	70.0	123.0	92.0				
30	72.2	-----	142.7	43.5	115.0	102.0	55.0	32.7	361.0	38.1	61.0	102.0				
31	61.6	-----	228.8	-----	197.0	-----	48.0	80.0	-----	43.0	-----	748.0				
MEAN	71.3	113.0	89.8	59.6	71.9	116.3	113.9	109.0	704.4	344.3	179.4	131.3				
INCHES	1.05	1.51	1.33	.85	1.06	1.66	1.68	1.61	10.08	5.09	2.57	1.94				
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0004769. DAILY DISCHARGE IS COMBINED FLOWS OF NORTH, MAIN, AND SOUTH CANALS FROM RECORDS OF U.S. GEOLOGICAL SURVEY. RUNOFF SUBJECT TO CONTROL. RECORDS POOR TO FAIR, ERROR ± 15%.																
1963 SELECTED RUNOFF EVENT						VERO BEACH, FLORIDA (MAIN, NORTH, SOUTH CANALS) WATERSHED W-1 8.1										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of September 22-30, 1963																
9-22	.002/	3/.08	9-22	4 RG	AVG 1/		9-22	1200	240	.0000						
				1500	.00	.00		1800	250	.0292						
				2000	.27	1.35		2200	700	.0670						
			9-23	1600	.01	1.55		0200	860	.1290						
				1800	.18	1.91	9-23	1500	875	.3531						
			9-24	0200	.02	2.07										
				0800	.14	2.91	9-24	0400	1050	.6017						
				1600	.45	6.51		0900	1930	.7497						
				1700	.94	7.45		1200	2800	.8907						
				1800	.05	7.50		1500	4000	1.0934						
				2000	.26	8.02	9-25	1800	5000	1.3616						
Watershed conditions:								2100	5330	1.6695						
Approximate land use: (from SCS)								2400	5230	1.9842						
40% in citrus groves (85% of								0600	5000	2.5940						
groves irrigated from canals							9-25	1200	4760	3.1759						
and artesian wells)								2400	4280	4.2536						
32% in improved pasture							9-26	1200	3600	5.1931						
22% unimproved range and forest								1800	3160	5.5960						
6% urban development							9-27	2400	2600	5.9394						
								0600	2140	6.2219						
							9-28	1800	1380	6.6416						
								2400	1080	6.7882						
								0600	900	6.9062						
								1200	780	7.0064						
							9-30	2400	610	7.1721						
								1200	400	4/7.5332						
NOTES: TO CONVERT CFS TO IN/HR MULTIPLY BY .00001987. FOR MAP OF WATERSHED SEE PAGE 8.1-7 IN SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960. 1/ PRECIPITATION IS ARITHMETICAL AVERAGE OF 4 RG. 2/ NO PRECIPITATION PRIOR TO 1500. 3/ RUNOFF PRIOR TO 1200. FOR 30-DAY ANTECEDENT P AND Q SEE TABLE ABOVE AND ON PREVIOUS PAGE. 4/ RETURN TO NORMAL BASE FLOW.																



VERO BEACH, FLORIDA WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF ^{1/2/} (inches)							VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-2 8.2									
							AREA -- 63,170 ACRES (98.7 SQ. MILES)									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P	.85	4.20	1.10	.75	4.75	5.44	3.12	3.48	7.36	.69	3.02	3.50	38.26		
	Q	.08	.29	.19	.03	.03	.13	.09	.03	.36	.29	.13	.10	1.75		
STA AV ^{3/}		1.84	2.28	3.88	2.53	4.96	7.41	5.86	5.98	7.27	3.89	1.36	1.75	49.01		
(55-63) Q		.44	.51	1.21	.26	.43	1.96	1.78	1.82	3.53	2.40	.33	.16	14.83		
MEAN P ^{4/}		1.59	1.76	2.75	3.34	3.93	7.16	5.99	6.03	7.16	4.82	1.73	1.51	47.77		
45 YRS																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
	DATE	RATE	1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
			DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963																
	2-27	.004	2-27	.004	2-27	.007	2-27	.021	2-27	.041	2-28	.075	2-27	.143	9-26	.372
MAXIMUMS FOR PERIOD OF RECORD																
1955 TO 1963	10-16 1956	.11	10-16 1956	.11	10-16 1956	.21	10-16 1956	.62	10-16 1956	1.23	10-16 1956	2.28	10-16 1956	4.16	10-16 1956	8.03
NOTES: Watershed conditions: range and forest, 53%; improved pasture, 31%; citrus, 1%; miscellaneous, 15%. 1/ Precipitation Thiessen weighted using 7 gages. 2/ Runoff data furnished by U.S. Geological Survey. 3/ Precipitation and runoff records began July 1955. 4/ Mean P based on 45 yr (1919-1963) U.S. Weather Bureau record at Okeechobee Hurricane Gate 6, Fla.																

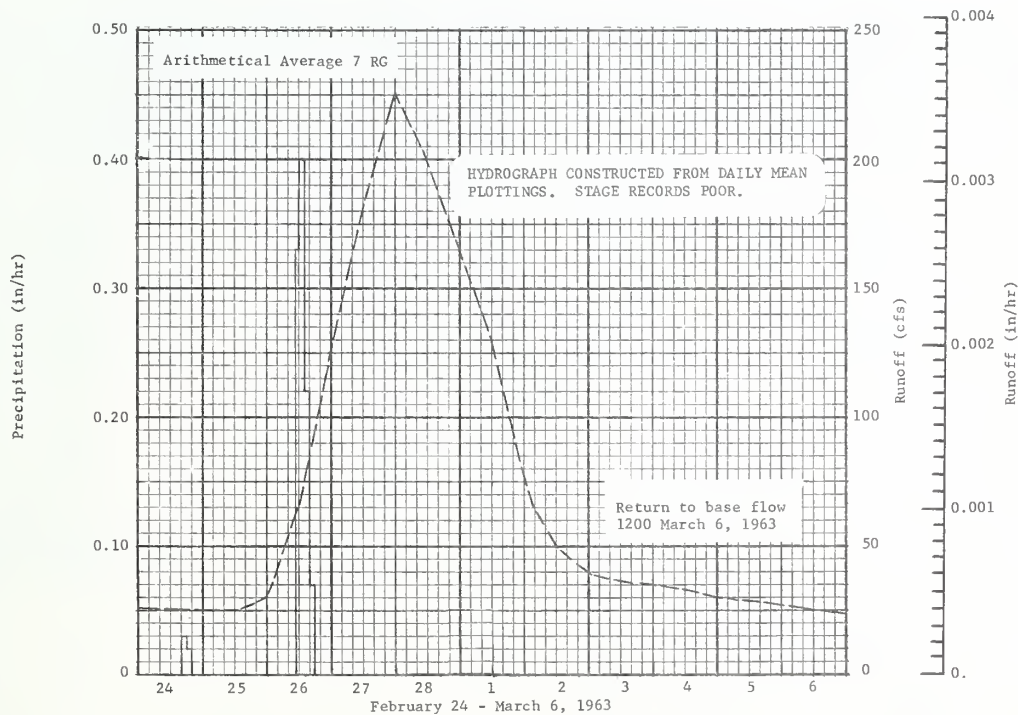
1963 DAILY AIR TEMPERATURE (degrees F)													VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-2 8.2												
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
1	69	39	82	61	74	57	79	63	86	68	86	73	90	76	95	73	96	75	90	67	80	50	61	41	
2	71	41	81	53	83	63	81	64	80	61	88	72	92	73	97	72	96	73	90	72	82	66	61	41	
3	68	39	81	59	82	61	81	59	78	63	89	71	93	74	91	72	92	73	80	71	70	45	72	48	
4	66	42	83	57	84	66	83	55	68	63	87	73	93	77	93	73	96	75	87	70	77	60	73	40	
5	73	48	72	49	82	65	87	60	80	61	91	73	94	75	95	75	95	74	85	67	81	68	68	38	
6	76	56	59	49	84	69	86	57	84	57	88	70	94	75	91	73	96	75	87	73	77	64	71	39	
7	76	50	59	48	82	56	87	57	89	61	89	71	94	75	96	71	92	73	86	72	82	61	68	44	
8	63	49	75	55	70	48	80	55	90	64	91	68	92	76	97	70	94	75	87	69	81	50	72	47	
9	62	35	76	41	74	50	82	56	91	67	87	70	94	75	99	75	91	70	88	68	80	51	78	41	
10	65	37	70	50	80	58	84	62	91	67	92	74	91	76	98	72	92	69	88	65	83	74	67	37	
11	72	42	75	61	78	66	87	66	92	69	92	73	90	74	95	75	93	69	86	64	75	67	70	41	
12	79	65	83	66	85	68	89	61	91	68	93	77	92	71	94	74	94	70	85	64	78	64	79	47	
13	84	65	78	43	87	68	90	69	93	74	93	76	91	71	97	73	93	73	85	62	76	54	83	60	
14	84	63	58	40	88	67	85	55	85	69	87	76	90	75	94	76	94	73	87	64	69	40	83	64	
15	65	57	66	38	87	66	75	46	88	65	94	77	90	72	93	75	93	74	86	64	61	40	85	54	
16	67	52	67	49	82	63	80	47	92	71	90	76	93	75	94	73	88	73	84	66	72	50	62	55	
17	69	56	64	52	86	67	85	54	94	72	90	75	90	75	96	75	90	74	79	66	74	60	65	56	
18	83	54	68	50	87	62	84	54	93	70	89	74	90	76	97	72	89	73	84	63	77	60	60	54	
19	83	58	76	68	91	65	87	56	93	73	94	76	91	75	93	73	92	73	83	62	79	58	68	38	
20	83	68	77	45	88	67	88	60	93	73	93	76	93	76	91	70	83	72	85	63	81	59	63	40	
21	85	63	66	39	85	60	88	65	91	74	92	78	96	76	86	70	82	72	85	54	78	60	66	48	
22	68	38	74	51	73	44	90	65	92	71	92	73	93	78	90	68	88	77	87	57	82	61	70	49	
23	73	58	69	44	68	42	90	65	93	74	93	75	94	72	91	71	88	74	88	67	83	55	78	59	
24	81	57	72	63	74	53	92	68	92	74	91	74	84	74	93	72	87	74	82	66	84	62	75	50	
25	54	43	82	52	75	58	90	68	91	74	90	76	94	74	93	72	79	71	85	61	84	62	57	30	
26	68	64	78	64	78	61	88	67	92	73	88	74	93	76	95	72	87	73	87	65	84	63	59	33	
27	76	61	67	38	83	61	89	67	91	74	88	75	92	78	95	73	90	75	89	60	84	62	67	41	
28	80	43	61	40	85	59	85	67	92	77	88	73	94	78	95	71	92	76	88	61	85	63	73	45	
29	73	51	---	---	85	64	82	62	85	74	90	74	93	73	96	72	90	78	88	66	81	67	75	53	
30	74	56	---	---	82	61	80	63	90	73	92	75	91	72	96	72	91	68	81	48	75	40	73	60	
31	80	56	---	---	80	66	---	---	89	72	---	---	92	72	96	71	---	---	78	53	---	---	---	66	65
AV.	73	52	72	51	81	61	85	60	89	69	90	74	92	75	94	72	91	73	86	64	78	58	70	47	
MEAN	62.5		61.5		70.0		72.8		79.0		82.0		83.4		83.3		82.0		74.8		68.2		58.4		
STA AV	74	51	77	53	79	57	83	63	88	69	90	74	91	75	92	75	90	74	86	66	81	61	74	51	
NOTES: TEMPERATURE DATA FROM R-3, READINGS TAKEN DAILY. STA AV COVERS PERIOD FROM JULY 1, 1956 THROUGH 1963.																									

1963 DAILY PRECIPITATION (inches)						VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-2 8.2						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.07	.00	.35	.01	.00	.00	.09	.00	.00	.00
2	.00	.00	.15	.00	.00	.00	.00	.11	.00	.00	.00	.00
3	.00	.09	.00	.00	1.34	.37	.04	.00	.36	.10	.00	.00
4	.00	.29	.00	.00	.00	.91	.08	.00	.07	.00	.00	.00
5	.00	.00	.00	.00	.00	.60	.00	.05	.52	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.39	.00	.25	.00
7	.20	.00	.11	.00	.00	.00	.04	.00	.13	.01	.25	.00
8	.00	.00	.00	.00	.00	.25	.01	.11	.21	.00	.00	.00
9	.00	.00	.22	.00	.00	.00	.00	.08	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.12	.04	.03	.00	.09	2.12	.00
11	.00	.02	.00	.00	.00	.33	.34	.00	.08	.00	.02	.00
12	.00	.68	.05	.00	.15	.00	.47	.23	.07	.00	.18	.00
13	.00	.00	.00	.00	.00	.00	.00	.04	.16	.00	.00	.00
14	.22	.00	.01	.00	.00	.12	.00	.28	.77	.04	.00	.00
15	.02	.00	.00	.00	.00	.37	.15	.14	.07	.19	.00	.04
16	.00	.50	.09	.00	.00	.35	.58	.00	.04	.23	.00	.14
17	.00	.00	.00	.00	.00	.08	.65	.00	.00	.03	.00	1.12
18	.00	.01	.00	.00	.00	.00	.17	.15	.37	.00	.00	.03
19	.00	.81	.00	.00	.00	.00	.00	.22	.47	.00	.00	.00
20	.00	.00	.00	.00	.02	.00	.01	.96	.71	.00	.00	.00
21	.30	.00	.00	.00	.05	.00	.00	.06	.18	.00	.02	.00
22	.00	.00	.00	.00	.00	.00	.06	.38	.33	.00	.00	.00
23	.00	.00	.00	.00	.98	.00	.00	.64	1.17	.00	.00	.35
24	.00	.07	.00	.00	.00	.00	.05	.00	1.15	.00	.00	.00
25	.00	.00	.08	.50	1.06	.22	.12	.00	.02	.00	.00	.00
26	.11	1.73	.00	.00	.01	.37	.00	.00	.00	.00	.00	.00
27	.00	.00	.05	.00	.12	.61	.00	.00	.00	.00	.00	.00
28	.00	.00	.05	.00	.16	.56	.17	.00	.00	.00	.00	.00
29	.00	-----	.00	.00	.02	.07	.01	.00	.00	.00	.18	.00
30	.00	-----	.22	.25	.15	.10	.13	.00	.00	.00	.00	1.04
31	.00	-----	.00	-----	.34	-----	.00	.00	-----	.00	-----	.78
TOTAL	.85	4.20	1.10	.75	4.75	5.44	3.12	3.48	7.36	.69	3.02	3.50
STA AV	1.84	2.28	3.88	2.53	4.96	7.41	5.86	5.98	7.27	3.89	1.36	1.75
NOTES: THIESSEN WEIGHTED RAINFALL - USING 7 GAGES, STA AV BASED ON PERIOD JULY 1, 1955 THROUGH 1963												

1963 MEAN DAILY DISCHARGE (cfs)						VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-2 8.2						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	7.4	4.7	130.0	3.4	3.2	3.4	18.0	3.2	2.3	140.0	3.0	6.7
2	7.1	4.6	50.0	3.0	3.7	3.4	14.0	3.0	2.3	131.0	2.8	6.3
3	6.8	4.5	37.0	2.7	3.7	3.4	11.0	2.7	2.3	80.0	2.7	6.0
4	6.5	4.8	31.0	2.6	3.0	5.0	9.5	2.5	2.3	60.0	2.5	5.6
5	6.3	7.0	28.0	2.5	2.5	7.5	8.5	2.4	2.3	45.0	2.4	5.3
6	6.1	9.0	25.0	2.4	2.2	12.0	7.8	2.3	2.4	38.0	2.7	5.1
7	5.9	9.8	22.0	2.5	2.0	18.0	7.4	2.2	2.8	31.0	3.5	4.7
8	5.8	9.4	20.0	2.7	1.9	18.0	6.8	2.2	3.5	26.0	4.6	4.5
9	5.7	9.0	18.0	2.9	1.9	16.0	6.6	2.2	5.0	23.0	5.4	4.2
10	5.6	8.5	16.0	3.0	1.8	15.0	6.4	2.2	6.5	20.0	6.0	4.0
11	5.5	8.0	15.0	3.0	1.8	14.0	6.2	2.1	8.0	17.0	18.0	3.8
12	5.4	8.0	14.0	3.0	1.8	12.0	6.3	2.1	9.0	15.0	20.0	3.6
13	5.4	8.5	12.0	2.9	1.8	11.0	6.4	2.1	10.0	14.0	21.0	3.5
14	5.4	9.5	11.0	2.9	1.9	10.0	6.6	2.1	11.0	13.0	21.0	3.3
15	5.4	9.9	9.8	2.8	1.9	10.0	6.8	2.1	13.0	12.0	21.0	3.2
16	7.0	11.0	8.5	2.7	1.9	10.0	7.0	2.1	14.0	11.0	20.0	3.1
17	8.0	12.0	7.5	2.6	1.9	11.0	7.4	2.1	15.0	10.0	20.0	4.0
18	8.8	14.0	6.8	2.5	1.9	11.0	8.8	2.1	16.0	9.0	19.0	12.0
19	9.3	16.0	6.0	2.5	1.9	12.0	11.0	2.5	17.0	8.5	18.0	16.0
20	9.8	22.0	5.4	2.4	1.9	12.0	12.0	5.4	18.0	8.0	16.0	15.0
21	10.0	25.0	4.8	2.3	1.9	12.0	11.0	5.8	20.0	7.4	15.0	14.0
22	10.0	26.0	4.2	2.3	1.9	12.0	10.0	5.7	22.0	7.0	14.0	14.0
23	10.0	26.0	4.0	2.2	1.9	11.0	9.0	4.6	26.0	6.3	12.0	13.0
24	8.8	25.0	3.8	2.2	2.0	11.0	7.8	4.0	35.0	5.8	11.0	13.0
25	7.6	25.0	3.7	2.4	2.2	11.0	6.9	3.5	45.0	5.3	10.0	12.0
26	6.6	70.0	3.6	2.7	2.4	11.0	6.0	3.2	70.0	4.8	9.2	12.0
27	6.0	180.0	3.6	2.8	2.8	12.0	5.2	3.0	126.0	4.5	8.6	11.0
28	5.6	200.0	3.6	2.9	3.2	14.0	4.7	2.8	140.0	4.1	8.0	11.0
29	5.2	-----	4.0	2.9	3.3	17.0	4.2	2.6	150.0	3.8	7.6	11.0
30	5.0	-----	4.1	2.9	3.3	22.0	3.8	2.5	150.0	3.5	7.1	11.0
31	4.9	-----	3.8	-----	3.3	-----	3.5	2.4	-----	3.2	-----	25.0
MEAN	6.87	27.4	16.7	2.69	2.35	11.6	7.95	2.89	31.6	24.7	11.1	8.61
INCHES	.08	.29	.19	.03	.03	.13	.09	.03	.36	.29	.13	.10
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0003768. RUNOFF DATA FURNISHED BY THE U.S. GEOLOGICAL SURVEY. RECORDS ARE POOR AND MAY BE IN ERROR BY 15 % OR MORE. DISCHARGE MEASUREMENTS GENERALLY MADE ONCE A WEEK.												

1963 SELECTED RUNOFF EVENT			VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-2				8.2			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of February 24 - March 6, 1963										
2-24	.002/	3/.01	2-24	7 RG	AVG 1/		2-24	2400	25	.0000
				1600	.00	.00		1200	25	.0047
				1800	.03	.06		2400	30	.0098
				2000	.02	.10		1200	65	.0188
			2-26	1100	.00	.10	2-26	2400	125	.0367
				1200	.33	.43				
			2-28	1400	.40	1.23	2-27	1200	180	.0654
				1600	.22	1.67		2400	225	.1036
				1800	.07	1.81		1200	200	.1436
				2200	.00	1.81	2-28	2400	165	.1781
				2400	.04	1.89		1200	130	.2059
				Watershed conditions:							3-2	2400	77	.2254
Approximate land use: (from SCS)							3-2	0400	65	.2298
31% in improved pasture							1200	50	.2370	
1% in citrus							2400	40	.2455	
53% in range and forest							3-3	1200	37	.2527
15% in miscellaneous and other							2400	35	.2596	
							3-4	1200	33	.2659
							2400	30	.2718	
							3-5	1200	29	.2773
							2400	27	.2826	
							3-6	1200	25	4/ .2875

NOTES: TO CONVERT CFS TO IN/HR MULTIPLY BY .00001570. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 8.2-4. 1/ PRECIPITATION IS ARITHMETICAL AVERAGE OF 7 RG. 2/ PRECIPITATION PRIOR TO 1600. 3/ RUNOFF PRIOR TO 2400. FOR ANTECEDENT P AND Q SEE TABLES ON PREVIOUS PAGES. 4/ RETURN TO BASE FLOW.



VERO BEACH, FLORIDA WATERSHED W-2

MONTHLY PRECIPITATION AND RUNOFF ^{1/2/} (inches)						VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-3 AREA — 10,050 ACRES (15.7 SQ. MILES)								8.3		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P	.81	4.17	1.30	.80	5.65	5.93	5.08	1.84	8.62	1.39	3.09	3.05	41.73		
	Q	.02	.12	.13	.01	.01	.14	.15	.02	.93	.22	.18	.10	2.03		
STA AV	P	1.84	2.07	3.98	3.26	5.02	6.90	6.33	5.70	6.87	4.09	1.25	1.57	48.88		
(55-63)	Q	.38	.21	1.22	.24	.34	1.16	1.35	1.44	3.47	2.15	.13	.10	12.19		
MEAN P	4/	1.59	1.76	2.75	3.34	3.93	7.16	5.99	6.03	7.16	4.82	1.73	1.51	47.77		
45 YRS.																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-25	.013	9-25	.013	9-25	.026	9-25	.076	9-25	.150	9-25	.250	9-25	.497	9-24	.910
MAXIMUMS FOR PERIOD OF RECORD																
1955 TO	10-15	.25	10-15	.24	10-15	.47	10-15	1.35	10-15	2.55	10-15	3.14	10-15	6.21	10-15	8.67
1963	1956		1956		1956		1956		1956		1956		1956		1956	
NOTES: Quality of Records: Q, good except those for periods of shifting control and indefinite stage-discharge relation, which are fair. Watershed conditions: range and forest, 53%; improved pasture, 37%; miscellaneous, 10%. 1/ Precipitation Thiessen weighted using 2 gages. 2/ Runoff data furnished by U.S. Geological Survey. 3/ Precipitation and runoff records began July 1955. 4/ Mean P based on 45 yr (1919-1963) U.S. Weather Bureau record period at Okeechobee Hurricane Gate 6, Fla.																
1963 DAILY PRECIPITATION (inches)						VERO BEACH, FLORIDA WATERSHED W-3 8.3										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.15	.00	.37	.00	.00	.00	.00	.00	.00	.00				
2	.00	.00	.03	.00	.00	.00	.00	.00	.00	.49	.00	.00				
3	.00	.00	.00	.00	1.18	.66	.00	.00	.22	.00	.00	.00				
4	.00	.20	.00	.00	.00	.76	.17	.00	.00	.00	.00	.00				
5	.00	.02	.00	.00	.00	.61	.00	.11	.15	.00	.00	.00				
6	.00	.00	.00	.00	.00	.00	.00	.00	.62	.00	.15	.00				
7	.23	.00	.05	.00	.00	.00	.02	.00	.34	.04	.40	.00				
8	.00	.00	.00	.00	.00	.00	.06	.11	.00	.00	.00	.00				
9	.00	.00	.29	.00	.00	.00	.00	.09	.00	.00	.00	.00				
10	.00	.00	.00	.00	.00	.00	.10	.02	.00	.00	2.13	.00				
11	.00	.00	.00	.00	.00	.42	1.12	.00	.00	.00	.00	.00				
12	.00	.92	.13	.00	.54	.00	.13	.02	.00	.00	.36	.00				
13	.00	.00	.00	.00	.00	.00	.00	.00	.25	.00	.00	.00				
14	.18	.00	.06	.00	.00	.00	.00	.13	1.74	.04	.00	.00				
15	.08	.00	.00	.00	.00	.38	.00	.00	.04	.05	.00	.00				
16	.00	.53	.11	.00	.00	.65	.61	.00	.04	.71	.00	.04				
17	.00	.00	.00	.00	.00	.34	1.50	.00	.00	.06	.00	1.05				
18	.00	.06	.00	.00	.00	.00	.26	.02	.40	.00	.00	.00				
19	.00	.65	.00	.00	.00	.00	.00	.27	.42	.00	.00	.00				
20	.00	.00	.00	.00	.00	.00	.06	.62	.45	.00	.00	.00				
21	.22	.00	.00	.00	.23	.00	.00	.12	.12	.00	.05	.00				
22	.00	.00	.00	.00	.00	.00	.08	.28	.65	.00	.00	.00				
23	.00	.00	.00	.00	.34	.00	.00	.05	1.43	.00	.00	.41				
24	.00	.06	.00	.00	.00	.02	.09	.00	1.67	.00	.00	.00				
25	.00	.00	.00	.46	1.48	.14	.43	.00	.08	.00	.00	.00				
26	.10	1.73	.00	.00	.04	.28	.00	.00	.00	.00	.00	.00				
27	.00	.00	.07	.00	.15	.80	.00	.00	.00	.00	.00	.00				
28	.00	.00	.00	.00	.47	.87	.45	.00	.00	.00	.00	.00				
29	.00	-----	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00				
30	.00	-----	.41	.34	.33	.00	.00	.00	.00	.00	.00	1.13				
31	.00	-----	.00	-----	.49	-----	.00	.00	-----	.00	-----	.42				
TOTAL	0.81	4.17	1.30	0.80	5.65	5.93	5.08	1.84	8.62	1.39	3.09	3.05				
STA AV	1.84	2.07	3.98	3.26	5.02	6.90	6.33	5.70	6.87	4.09	1.25	1.57				
NOTES: THIESSEN WEIGHTED AVERAGE OF 2 GAGES. STA AV IS BASED ON PERIOD JULY 1, 1955 THROUGH 1963																

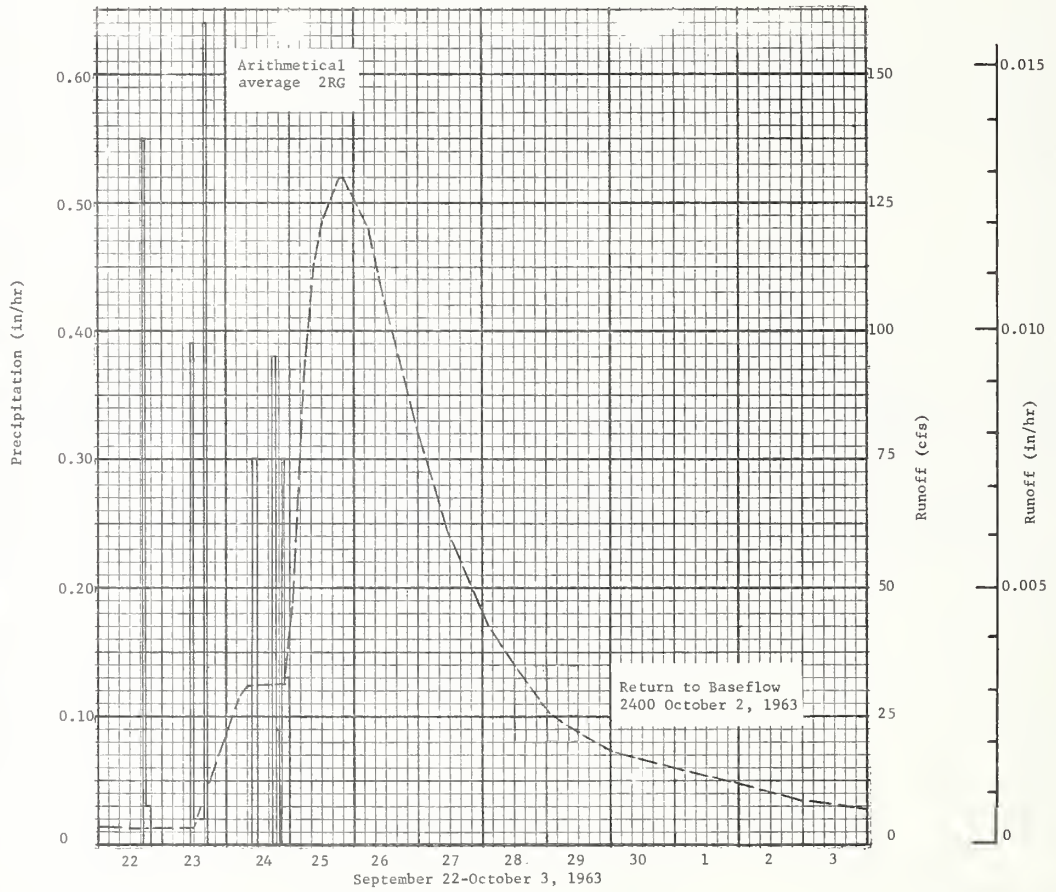
Cooperative Research Project of USDA, Florida Agricultural Experiment Station,
U. S. Geological Survey, and the Central and Southern Florida Flood Control District

1963 MEAN DAILY DISCHARGE (cfs)						VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-3 8.3						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.3	.3	7.0	.2	.0	1.0	4.7	1.2	.0	13.0	.0	.0
2	.2	.2	5.9	.2	.0	.7	3.4	.9	.0	10.0	.0	.0
3	.2	.2	5.3	.2	.0	.4	2.6	.7	.0	9.3	.0	.0
4	.2	.2	4.2	.1	.1	2.5	2.1	.5	.1	9.0	.0	.0
5	.2	.3	3.6	.1	.1	6.3	1.8	.4	.1	8.6	.0	.0
6	.2	.3	3.0	.1	.1	7.4	1.5	.4	.1	8.2	.0	.0
7	.2	.3	2.4	.1	.1	3.1	1.4	.2	.1	7.4	.0	.0
8	.3	.3	2.1	.1	.1	1.8	1.2	.2	.1	6.3	.0	.0
9	.3	.2	1.9	.1	.1	1.4	.8	.1	.1	5.3	.0	.0
10	.3	.2	2.1	.1	.1	1.2	.6	.1	.1	1.7	.0	.0
11	.3	.2	2.3	.1	.1	.8	.5	.1	.1	.0	9.0	.0
12	.2	.3	2.0	.1	.0	.7	.4	.1	.1	.5	9.3	.0
13	.2	.7	1.8	.1	.0	.8	.7	.1	.1	.0	9.0	.0
14	.3	.8	1.8	.1	.0	.7	1.0	.1	.1	.4	8.5	.0
15	.4	.7	1.5	.1	.0	.5	.8	.1	.4	.7	7.4	.0
16	.4	.6	1.4	.0	.0	1.0	.5	.1	1.8	1.0	5.3	.0
17	.4	1.1	1.2	.0	.0	2.1	1.0	.1	1.4	2.5	4.2	.0
18	.4	1.4	1.1	.0	.0	2.3	6.0	.1	1.0	2.0	3.6	4.0
19	.4	1.7	.8	.0	.0	1.7	7.4	.1	1.2	.5	3.1	3.1
20	.3	3.0	.6	.0	.0	1.1	5.3	.1	1.8	.5	2.8	2.2
21	.4	2.1	.4	.0	.0	.8	3.8	.1	2.7	1.0	2.6	1.8
22	.4	1.8	.3	.0	.0	.5	3.0	.1	3.0	1.1	2.4	1.6
23	.4	1.6	.2	.0	.0	.4	2.4	.1	6.5	1.0	2.2	1.4
24	.4	1.5	.2	.0	.0	.3	2.1	.1	31.0	.9	2.1	1.9
25	.3	1.5	.2	.0	.0	.2	1.7	.1	105.0	.7	1.9	2.4
26	.3	5.4	.2	.0	1.2	.3	1.4	.1	105.0	.6	1.8	2.1
27	.4	16.0	.2	.0	1.3	.7	1.3	.1	59.0	.5	1.1	1.8
28	.4	9.3	.1	.0	.8	3.2	1.2	.1	34.0	.4	.0	1.7
29	.3	-----	.1	.0	.7	9.7	1.0	.1	21.0	.3	.0	1.5
30	.3	-----	.1	.0	.6	7.8	1.8	.1	16.0	.1	.0	1.6
31	.3	-----	.2	-----	.8	-----	1.6	.0	-----	.0	-----	17.0
MEAN	.31	1.86	1.75	.06	.20	2.05	2.10	.22	13.1	3.02	2.54	1.42
INCHES	.02	.12	.13	.004	.01	.15	.15	.02	.93	.22	.18	.10

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY MULTIPLY BY .002368. RUNOFF DATA FURNISHED BY U. S. GEOLOGICAL SURVEY. RECORDS ARE GOOD, EXCEPT THOSE FOR PERIODS OF SHIFTING CONTROL AND INDEFINITE STAGE-DISCHARGE RELATION, WHICH ARE FAIR. PROBABLY ACCURATE WITHIN 5 TO 15 PERCENT.

1963 SELECTED RUNOFF EVENT			VERO BEACH, FLORIDA (TAYLOR CREEK)				WATERSHED W-3 8.3				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of September 22 - October 2, 1963											
9-22	1/ .00	2/ T	9-22	2 RG	AVG 3/		9-22	1200	3	.0000	
				1700	.00	.00		1200	3	.0072	
				1800	.55	.55		9-23	1200	3	.0072
				2000	.03	.61		9-24	0500	28	.0332
			9-23	1100	.00	.61	0900	31	.0448		
				1200	.39	1.00	2200	32	.0853		
			9-24	1600	.02	1.08	9-25	0100	45	.0967	
				1730	.64	2.04		0600	93	.1307	
				1000	.00	2.04		0900	112	.1611	
				1200	.30	2.64		1200	121	.1956	
				1730	.00	2.64		1900	130	.2823	
			Watershed conditions: Approximate land use (from SCS) 37% in improved pasture 53% in range and forest 10% in miscellaneous and other	1900	.38	3.21	9-26	2200	130	.3208	
				2000	.09	3.30		0600	119	.4191	
				2100	.00	3.30		1200	105	.4854	
				2200	.30	3.60		2400	80	.5950	
				2400	.13	3.86		1200	60	.6779	
9-28	2400	45		.7401							
	1200	35		.7875							
	2400	26		.8236							
	9-29	1200		22	.8521						
2400		18		.8757							
9-30	2400	15	.9148								
	10-1	2400	12	.9467							
	10-2	2400	8	.9705							

NOTES: TO CONVERT CFS TO IN/HR MULTIPLY BY .00009868. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1955-59, USDA MISC. PUB. 945, P. 8.2-4. 1/ RAINFALL PRIOR TO 1700. 2/ RUNOFF PRIOR TO 1200. 3/ PRECIPITATION IS ARITHMETICAL AVERAGE, 2 GAGES. FOR 30-DAY ANTECEDENT P AND Q SEE TABLE ABOVE AND THAT ON PREVIOUS PAGE. 4/ RETURN TO BASE FLOW.



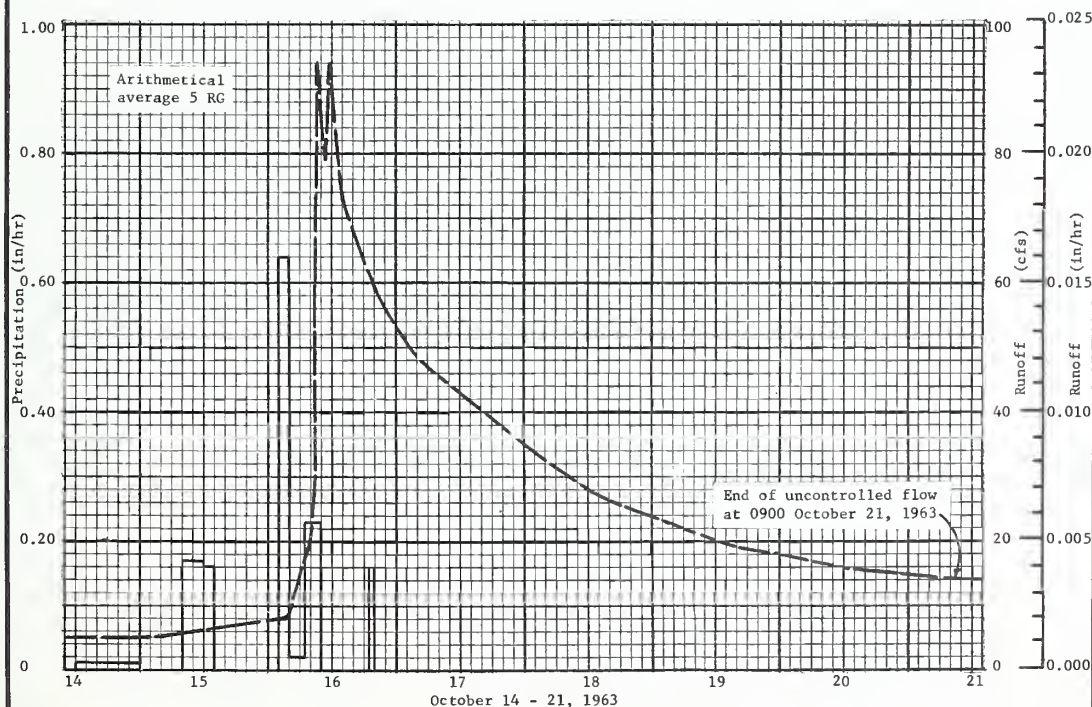
VERO BEACH, FLORIDA WATERSHED W-3

MONTHLY PRECIPITATION ^{1/} AND RUNOFF ^{2/} (inches)						VERO BEACH, FLORIDA (MONREVE RANCH) AREA - 3,968 ACRES (6.2 SQ. MILES)					WATERSHED W-4		8.4			
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC	ANNUAL		
1963	P	1.06	3.84	.98	.77	5.34	4.42	3.72	4.02	7.91	5.74	2.48	7.95	48.23		
	I ^{3/}	.72	.00	1.02	2.02	.70	.18	.53	.24	.00	.00	.09	.35	5.85		
	Q	.19	.17	.29	.28	.39	.28	.14	.20	.61	2.08	.38	1.05	6.06		
	4/															
STA AV P		1.94	1.83	3.20	3.86	5.81	6.89	5.71	6.78	9.13	4.63	2.47	2.56	54.81		
	(61-63)I ^{3/}	.87	.82	1.05	.95	.33	.08	.18	.12	.11	.18	.34	1.86	6.89		
	(59-63)Q	.47	.47	.51	.82	1.08	1.04	1.87	1.85	4.05	2.27	.93	.77	16.13		
MEAN P ^{5/}																
63 YR		2.33	2.39	3.02	3.35	4.26	5.86	5.51	5.62	8.06	7.34	2.76	2.11	52.61		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	10-16	.023	10-16	.023	10-16	.044	10-16	.126	10-16	.216	10-16	.288	10-16	.546	10-15	1.06
MAXIMUMS FOR PERIOD OF RECORD																
1959 TO	9-23	.19	9-23	.19	9-23	.37	9-23	1.02	9-23	1.68	9-24	2.33	9-23	4.08	9-22	9.20
1963	1960		1960		1960		1960		1960		1960		1960		1960	
NOTES: Watershed conditions: native range, 70%; improved pasture, 30%. 1/ Precipitation Thiessen weighted using 5 gages 2/ Runoff data furnished by U.S. Geological Survey. 3/ (I) denotes pumped irrigation which augmented natural rainfall on area. 4/ Precipitation records began Jan. 1959, irrigation in Jan. 1960, and runoff records, July 1959. 5/ Mean P based on 63 yr (1901-1963) U.S. Weather Bureau record period at Fort Pierce No. 1, Fla.																
1963 DAILY PRECIPITATION (inches)						VERO BEACH, FLORIDA (MONREVE RANCH) WATERSHED W-4								8.4		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.09	.00	.21	.08	.00	.00	.00	.00	.00	.00				
2	.00	.00	.00	.00	.00	.07	.00	.04	.19	1.88	.00	.00				
3	.00	.11	.00	.00	2.12	.20	.00	.00	.00	.00	.00	.01				
4	.00	.71	.00	.00	.00	.28	.02	.11	.21	.00	.00	.00				
5	.00	.00	.00	.00	.00	.58	.00	.04	.00	.00	.29	.00				
6	.23	.00	.00	.00	.00	.00	1.21	.00	.92	.00	.19	.00				
7	.04	.00	.11	.00	.00	.00	.00	.00	.12	.00	.00	.00				
8	.00	.00	.00	.00	.00	.00	.00	.12	.17	.00	.00	.00				
9	.00	.00	.37	.00	.00	.10	.00	.26	.00	.02	.08	.00				
10	.00	.00	.00	.00	.00	.00	.04	.41	.00	.24	1.12	.00				
11	.00	.00	.00	.00	.00	.00	.03	.08	1.55	.18	.00	.00				
12	.00	1.04	.00	.00	.00	.00	.17	.28	.50	.00	.00	.00				
13	.00	.00	.00	.00	.00	.00	.03	.04	.00	.00	.00	.00				
14	.00	.00	.00	.00	.02	.11	.21	.00	.33	.14	.00	.00				
15	.00	.00	.00	.00	.00	.00	.00	.02	.17	.98	.00	.00				
16	.00	.51	.00	.00	.00	.02	.19	1.07	.52	2.30	.00	.37				
17	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	1.39				
18	.00	.00	.00	.00	.00	.25	.00	.18	.03	.00	.00	.14				
19	.00	.34	.00	.00	.00	.00	.00	.21	.65	.00	.00	.00				
20	.00	.00	.00	.00	.00	.00	.04	.63	.07	.00	.00	.00				
21	.72	.00	.00	.00	.91	.00	.00	.35	.13	.00	.00	.00				
22	.00	.00	.00	.00	.00	.00	.00	.01	.25	.00	.00	.00				
23	.06	.00	.00	.00	.24	.02	.00	.13	.56	.00	.00	.06				
24	.00	.02	.00	.00	.00	.17	.00	.00	1.08	.00	.00	.00				
25	.00	.00	.29	.77	.00	.96	.02	.00	.46	.00	.00	.00				
26	.01	1.11	.00	.00	.10	.67	.08	.04	.00	.00	.20	.00				
27	.00	.00	.00	.00	.00	.11	.00	.00	.00	.00	.00	.00				
28	.00	.00	.12	.00	.19	.70	.51	.00	.00	.00	.00	.00				
29	.00	-----	.00	.00	.60	.00	.90	.00	.00	.00	.60	.00				
30	.00	-----	.00	.00	.95	.00	.00	.00	.00	.00	.00	2.91				
31	.00	-----	.00	-----	.00	-----	.27	.00	-----	.00	-----	3.07				
TOTAL	1.06	3.84	0.98	0.77	5.34	4.42	3.72	4.02	7.91	5.74	2.48	7.95				
STA AV	1.94	1.83	3.20	3.86	5.81	6.89	5.71	6.78	9.13	4.63	2.47	2.56				
NOTES: THIESSEN WEIGHTED RAINFALL 5 GAGES. STA AV BASED ON PERIOD FROM JAN. 1959 THROUGH 1963																

1963 DAILY IRRIGATION (inches)						VERO BEACH, FLORIDA (MONREVE RANCH) WATERSHED W-4 8.4						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.12	.00	.07	.00	.00	.00	.00	.00
3	.00	.00	.00	.04	.04	.00	.04	.00	.00	.00	.00	.00
4	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.05
7	.00	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.08
8	.00	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.09	.06	.00	.00	.04	.00	.00	.00	.00
10	.00	.00	.00	.08	.12	.00	.00	.08	.00	.00	.00	.00
11	.00	.00	.00	.12	.03	.00	.04	.00	.00	.00	.00	.00
12	.00	.00	.00	.12	.00	.00	.04	.00	.00	.00	.00	.16
13	.04	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.12
14	.12	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.04
15	.12	.00	.00	.12	.00	.04	.00	.00	.00	.00	.00	.00
16	.12	.00	.08	.12	.00	.00	.00	.00	.00	.00	.00	.00
17	.12	.00	.06	.12	.06	.00	.03	.00	.00	.00	.00	.00
18	.12	.00	.08	.12	.08	.00	.04	.00	.00	.00	.00	.00
19	.08	.00	.12	.12	.00	.05	.00	.00	.00	.00	.00	.00
20	.00	.00	.12	.12	.08	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.12	.12	.05	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.12	.06	.00	.04	.03	.00	.00	.00	.04	.00
23	.00	.00	.12	.00	.00	.05	.00	.00	.00	.00	.05	.00
24	.00	.00	.12	.00	.00	.00	.08	.00	.00	.00	.00	.00
25	.00	.00	.08	.00	.00	.00	.12	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.04	.04	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	-----	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00
30	.00	-----	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00
TOTAL	.72	.00	1.02	2.02	.70	.18	.53	.24	.00	.00	.09	.35
STA AV	.87	.82	1.05	.95	.33	.08	.18	.12	.11	.18	.34	1.86
NOTES: IRRIGATION COMPUTED FROM STAGE-LIFT CURVE AGAINST HOURS OF PUMP OPERATION. STA AV IS BASED ON PERIOD OF 1961 THROUGH 1963.												
1963 MEAN DAILY DISCHARGE (cfs)						VERO BEACH, FLORIDA (MONREVE RANCH) WATERSHED W-4 8.4						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.8	1.0	1.2	1.1	.8	2.8	1.0	.7	.4	1.5	3.3	1.5
2	.8	1.0	1.2	1.0	1.2	2.3	.6	.6	.4	17.0	2.2	1.5
3	.8	.9	1.2	1.0	14.0	2.2	.6	.5	.3	20.0	1.4	1.5
4	.7	1.0	1.1	1.4	11.0	2.0	.6	.5	.3	6.5	1.2	1.5
5	.7	1.0	1.0	1.4	4.4	1.7	.6	.5	.3	3.1	1.4	1.4
6	.7	1.0	1.0	1.9	2.6	2.0	1.9	.5	.5	3.7	1.7	1.4
7	.7	1.0	1.0	3.1	1.9	1.7	1.2	.4	.5	8.8	1.7	1.9
8	.7	.9	1.0	2.3	1.4	1.4	1.2	.4	.4	17.0	1.6	2.2
9	.7	.9	1.0	2.8	1.0	1.2	1.0	.4	.4	7.7	1.5	1.7
10	.7	.9	1.1	2.3	.9	1.0	.5	.5	.4	4.4	2.0	1.5
11	.7	.8	1.0	2.5	1.8	.8	.4	.6	.4	6.2	4.5	1.4
12	.7	1.0	1.0	2.5	.9	.7	2.0	.5	.4	6.6	4.9	1.2
13	.7	1.0	.9	2.3	.7	.7	.8	.4	.4	5.7	3.9	2.2
14	.9	1.0	.9	1.8	.6	.6	.6	.4	.5	4.9	3.1	3.3
15	1.6	1.0	.9	1.7	.5	1.6	.5	.4	.6	5.7	2.5	1.7
16	1.6	1.0	1.0	1.7	.5	1.7	.4	.4	.6	48.0	2.0	1.5
17	1.4	1.1	1.8	1.7	.4	.7	.4	.4	.6	43.0	1.9	1.6
18	1.2	1.1	1.9	1.6	.7	.6	1.0	.4	.6	28.0	1.7	1.8
19	1.2	1.2	2.6	1.5	.8	.6	.6	.4	.8	21.0	1.6	1.9
20	1.2	1.2	2.8	1.5	.6	.7	.5	.4	.4	14.0	1.5	1.9
21	1.2	1.1	3.0	1.5	2.2	.7	.4	4.8	6.2	8.7	1.5	1.8
22	1.2	1.1	2.8	1.6	.9	.6	.4	5.4	4.4	5.1	1.6	1.7
23	1.2	1.1	2.5	1.2	.7	2.2	.4	2.6	6.0	15.0	3.2	1.6
24	1.2	1.1	2.5	1.0	.6	.9	.4	2.0	7.2	5.9	1.7	1.7
25	1.2	1.0	2.5	.9	.5	.8	.6	1.5	19.0	5.1	1.6	1.7
26	1.2	1.2	2.0	1.0	.5	.8	.9	2.3	15.0	6.2	1.6	1.7
27	1.2	1.2	1.7	.9	.5	.8	.6	2.1	5.1	6.0	1.6	1.6
28	1.1	1.2	1.5	.8	.5	4.7	.6	1.0	2.3	5.4	1.5	1.6
29	1.1	-----	1.5	.8	1.3	6.0	.6	.6	3.0	4.9	1.7	1.6
30	1.0	-----	1.4	.7	6.5	2.8	.6	.4	2.0	4.2	1.6	4.9
31	1.0	-----	1.2	-----	4.2	-----	.8	.4	-----	3.7	-----	121.7
MEAN	1.00	1.04	1.55	1.58	2.10	1.58	.73	1.05	3.37	11.2	2.11	5.66
INCHES	.19	.17	.29	.28	.39	.28	.14	.20	.61	2.08	.38	1.05
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY MULTIPLY BY .005998. RUNOFF DATA FURNISHED BY U.S. GEOLOGICAL SURVEY. RECORDS ARE FAIR TO POOR, MAYBE IN ERROR \pm 15%. FLOW OCCASIONALLY REGULATED BY STOPLOG CONTROL 1,500 FT UPSTREAM. DISCHARGE INCLUDES SEEPAGE FLOW DIVERTED FROM ST. LUCIE CANAL FOR IRRIGATION.												

1963			SELECTED RUNOFF EVENT			VERO BEACH, FLORIDA (MONREVE RANCH) WATERSHED W-4				8.4	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of October 14-21, 1963											
10-14	2/.00	2/.02	5 RG AVG 1/								
			10-14	1200	.00	.00	10-14	1200	5	.0000	
				2400	.01	.12		10-15	0200	5	.0175
				0800	.00	.12		1000	6	.0285	
				1200	.17	.80		1800	7	.0414	
			10-15	1400	.16	1.12	10-16	0400	8	.0601	
			10-16	0200	.00	1.12	0600	15	.0659		
				0400	.64	2.40	0800	20	.0746		
				0700	.02	2.46	0900	29	.0807		
				1000	.23	3.15	0930	94	.0884		
				1900	.00	3.15	1100	79	.1208		
				2000	.16	3.31	1145	94	.1370		
<u>Watershed conditions:</u>											
Approximate land use: (from SCS)											
70% in native range											
30% in improved pasture											
Good cover on entire area, height											
of grass 3 to 6 inches.											
							10-17	0400	49	.3909	
								1200	43	.4829	
								2400	35	.5999	
							10-18	1200	28	.6943	
								2400	24	.7723	
							10-19	1200	20	.8383	
								2400	18	.8953	
							10-20	1200	16	.9463	
								2400	15	.9928	
							10-21	0900	14	3/ 1.0253	

NOTES: TO CONVERT CFS TO IN/HR MULTIPLY BY .0002499. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1962 USDA MISC. PUB.1070, 8.4-11. 1/ PRECIPITATION ARITHMETICAL AVERAGE, 5 GAGES. 2/ RAINFALL AND RUNOFF PRIOR TO 1200. FOR 30-DAY ANTECEDENT P AND Q SEE TABLES ON 2 PREVIOUS PAGES. 3/ END OF UNCONTROLLED FLOW.



VERO BEACH, FLORIDA WATERSHED W-4

MONTHLY PRECIPITATION AND RUNOFF (inches)							WATKINSVILLE, GEORGIA				WATERSHED W-1				10.01	
							AREA—19.2 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/	5.99	3.11	5.62	6.90	5.14	13.31	4.93	2.66	4.32	.00	4.58	6.50	63.06		
	Q	.73	.02	.25	1.25	.04	3.95	.13	.02	.05	.00	.04	.56	7.04		
STA AVG	2/	4.60	4.57	5.75	4.18	3.50	3.64	4.59	3.73	3.00	2.33	3.33	4.45	47.67		
(39-63)	Q	.50	.04	.51	.43	.27	.25	.28	.40	.02	.05	.33	.25	3.33		
MEAN	P 3/	4.69	4.89	5.19	3.88	3.64	4.18	5.09	4.36	3.38	2.91	2.85	4.39	49.45		
79 YR																

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-26	2.42	6-26	1.84	6-26	2.54	6-26	3.48	6-26	3.74	6-26	3.78	6-26	3.78	6-26	3.81

MAXIMUMS FOR PERIOD OF RECORD																
19 39 to	4-25	2.71	6-26	1.84	6-26	2.54	6-26	3.48	6-26	3.74	6-26	3.78	11-26	5.68	11-22	6.64
1963	1945		1963		1963		1963		1963		1963		1948		1948	

NOTES: Quality of runoff records: Due to minor recorder problems from live stock traffic near stilling well, discharge records are judged to be good or within 10 percent accuracy. Watershed conditions: Excellent Coastal Bermudagrass pasture; overseeded wheat-barley moderately grazed by beef cattle, Mar.-April (867 cow-days); Bermudagrass heavily grazed May-Sept. (8,000 cow-days) and oversown rye Nov.-Dec. (1,000 cow-days); fertilized with 1,000 lb/ac 6-12-12 plus 160 lb N, in May and June. 1/ Precipitation from rain gage R1-W1. 2/ P and Q records began Sept. 1, 1939. 3/ Mean P based on 79-yr (1885-1963) U. S. Weather Bureau record period at Athens, Ga.

SOILS: (Revision) Southern Piedmont material, developed in place by the weathering of granite, granite-gneiss, and mica schist bedrock (parent material).

Soil	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Cecil sandy clay loam 1/	60	4	Weak fine granular	Moderately rapid	Moderate fine to medium angular and subangular blocky	Moderate	55	Moderate	Medium
Undifferentiated alluvium 1/	30	4-70	Weak moderately fine granular	Rapid	Moderate fine crumb	Moderately rapid	55	Moderate	Medium
Madison sandy loam 1/	10	4	Weak fine granular	Moderately rapid	Moderate fine to coarse angular and subangular blocky	Moderate	55	Moderate	Medium
Cecil sandy clay loam 2/	100	4	Weak fine granular	Moderately rapid	Moderate fine to medium angular and subangular blocky	Moderate	55	Moderate	Medium

1/ For the period 1939-1957. 2/ After removal of bench terraces in 1957 and general smoothing of the watershed, the undifferentiated alluvium (fill above bench terraces) was dispersed. Madison sandy loam can no longer be delineated on the smoothed re-shaped slopes.

GEOLOGY: The watershed is underlain by igneous rocks of Precambrian age which have been subjected to considerable metamorphosis since their original cooling and crystallization. They consist of gneisses, gneissoids, mica schists and some granites, typical of the central Southern Piedmont upland. There is one small area in the middle of the upper quarter of the watershed where the gneiss bedrock outcrops on the surface. The soil mantle, which has developed in place from the weathering of the underlying rock formations, varies in thickness from zero at the outcrop to an estimated depth of 30 to 60 feet in the vicinity of the runoff gaging station. Surface water wells in the vicinity are about 30 feet deep. Adjacent stream channels intersect a waterbearing substratum of sands and saprolitic materials at elevations of 20 to 100 feet below the nearby hilltops. In the A soil horizon, the amount of quartz derived from the parent material may run from 75 to 90 percent. In the underlying B horizon, the clay content, predominately kaolinite, averages 50 percent. In the upper several feet of this mantle, the available water-holding capacity of the profile is from 1 to 2 inches per foot of depth. There is a strong likelihood that ground water moves beneath the gaging site on this watershed and in other similar upland structures in the vicinity. Source of data: Field reconnaissance by Stanley Robertson, Soil Scientist, Soil Conservation Service.

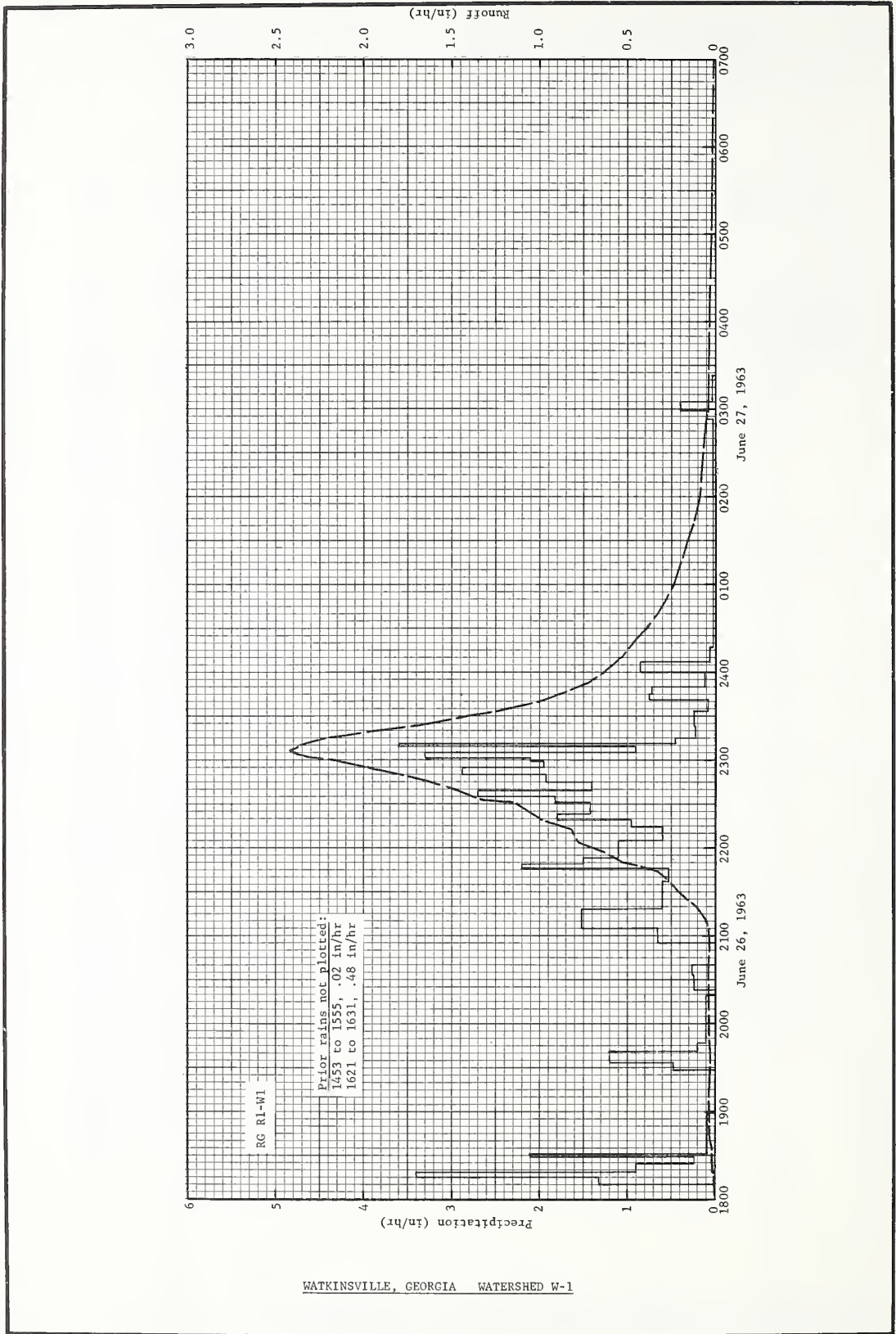
1963 SELECTED RUNOFF EVENT							WATKINSVILLE, GEORGIA		WATERSHED W-1		10.01	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr) 4/	ACC. (inches)		
Event of June 26 and 27, 1963												
5-26	RG R1-W1 .43	.0000	6-26	RG 1453	R1-W1 .00	.00	6-26	1800	.0000	.0000		
5-27	1.84	.0040		1555	5/ .02	.02		1810	.0003	.0000		
5-28	1.24	.0303		1621	.00	.02		1815	.0032	.0003		
5-29	.03	.0000		1631	5/ .48	.10		1819	.0092	.0009		
6-8	.32	.0000		1810	.00	.10		1823	.0136	.0018		
6-16	1.80	.0200		1815	1.32	.21		1827	.0142	.0051		
6-17	1.38	.0000		1818	3.40	.38		1835	.0188	.0076		

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.3599. FOR TOPOGRAPHIC MAP, SEE HYDROLOGIC DATA FOR 1956-59, USDA MISC. PUB. 945, P. 10.1-8. 4/ RATES ARE NOT CORRECTED FOR PONDAGE BACK OF WEIR, AS BEFORE. 5/ NOT PLOTTED ON GRAPH.

1963 SELECTED RUNOFF EVENT			WATKINSVILLE, GEORGIA				WATERSHED W-1				10.01	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
Event of June 26 and 27, 1963—Continued												
6-18	1.20	.0186	6-26	1824	.90	.47	6-26	1840	.0292	.0100		
6-19	.49	.0056		1829	.24	.49		1845	.0354	.0129		
6-20	.21	.0000		1831	2.10	.56		1905	.0364	.0250		
6-21	.33	.0000		1859	.09	.60		1910	.0345	.0279		
6-22	.31	.0000		1928	.00	.60		1930	.0275	.0371		
6-23	.46	.0000		1933	.48	.64		1940	.0275	.0417		
6-24	1.04	.0000		1939	1.20	.76		1948	.0365	.0465		
6-25	.03	.0000		1941	1.20	.80		1955	.0375	.0509		
6-26	1/ .78	.0000		1947	.20	.82		2000	.0344	.0538		
Watershed conditions: Well established, Coastal Bermuda-grass pasture, 8-12" high; grazed; stocking rate 2.2 cows/ac.				2013	.10	.83		2015	.0375	.0632		
				2019	.10	.84		2020	.0395	.0665		
				2023	.00	.84		2038	.0384	.0780		
				2033	.24	.88		2053	.0354	.0868		
				2040	.26	.91		2104	.0376	.0937		
				2055	.00	.91		2111	.0573	.1004		
				2105	.66	1.02		2120	.1074	.1165		
				2118	1.52	1.35		2125	.1653	.1302		
				2137	.60	1.44		2130	.2087	.1475		
				2146	.53	1.52		2135	.2479	.1681		
				2149	2.20	1.63		2140	.2856	.1918		
				2153	1.50	1.73		2143	.3269	.2081		
				2205	1.10	1.95		2146	.3843	.2273		
				2214	.60	2.04		2148	.4618	.2425		
				2219	.96	2.12		2150	.5268	.2599		
				2223	1.80	2.24		2155	.6043	.3101		
				2231	1.42	2.43		2200	.7024	.3684		
				2235	1.82	2.56		2204	.7851	.4210		
				2239	2.70	2.74		2212	.8161	.5295		
6-27	2245	1.40	2.88	2220	1.0020	.6628						
	2250	1.92	3.04	2230	1.1311	.8517						
	2255	2.88	3.28	2233	1.3429	.9188						
	2259	1.95	3.41	2240	1.4824	1.0920						
	2301	2.10	3.48	2245	1.6218	1.2270						
	2305	3.30	3.70	2250	1.7871	1.3610						
	2309	.90	3.76	2255	1.9730	1.5250						
	2311	3.60	3.88	2300	2.1590	1.7040						
	2315	.45	3.91	2302	2.3139	1.7810						
	2323	.22	3.94	2304	2.3759	1.8590						
	2333	.24	3.98	2306	2.4172	1.9390						
	2341	.08	3.99	2308	2.3759	2.0170						
	2345	.75	4.04	2310	2.3656	2.0960						
	2350	.72	4.10	2315	2.2106	2.2790						
	2400	.12	4.12	2320	1.9265	2.4390						
	0007	.86	4.22	2325	1.6321	2.5740						
	0017	.06	4.23	2330	1.4049	2.6910						
	0053	.02	4.24	2335	1.1776	2.7890						
	0123	.02	4.25	2340	1.0020	2.8720						
	0253	.02	4.26	2345	.8935	2.9460						
	0259	.10	4.27	2350	.7851	3.0110						
	0305	.40	4.31	2355	.6921	3.0690						
	0323	.03	4.32	2400	.6405	3.1220						
					6-27	0005	.5888	3.1710				
						0010	.5372	3.2150				
						0020	.4710	3.2940				
						0030	.3925	3.3600				
						0040	.3275	3.4140				
						0050	.2758	3.4600				
						0100	.2386	3.5000				
						0115	.1978	3.5500				
						0130	.1529	3.5880				
						0145	.1167	3.6170				
						0200	.0888	3.6390				
						0230	.0651	3.6720				
						0300	.0443	3.6940				
						0400	.0294	3.7230				
						0500	.0181	3.7410				
					0600	.0108	3.7520					
					0700	.0069	3.7590					
					0900	.0045	3.7680					
					1200	.0023	3.7740					
					2400	.0007	3.7790					

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.3599. 1/ RAINFALL PRIOR TO 1100.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.3599. 1/ RAINFALL PRIOR TO 1100.



MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA WATERSHED W-III AREA—19.3 ACRES								
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 P1/ Q	1.51 T	1.50 T	4.50 .01	1.20 T	2.54 T	2.01 T	2.56 T	2.07 T	4.01 T	.12 .00	3.33 T	1.82 T	27.17 .01	
STA AV2/ P (40-63) Q	2.60 T	2.82 .01	3.30 T	3.00 .04	3.63 .06	3.88 .12	3.88 .06	3.59 .04	2.93 .01	2.21 .01	2.23 .01	2.80 .01	36.87 .37	
MEAN P 3/ 73 YR	3.17	3.08	3.67	3.13	3.70	4.16	4.65	3.94	3.00	2.69	2.39	3.08	40.66	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-1	.0055	3-1	.0038	3-1	.0055	3-1	.0061	3-1	.0061	3-1	.0061	3-1	.0061	3-1	.0061

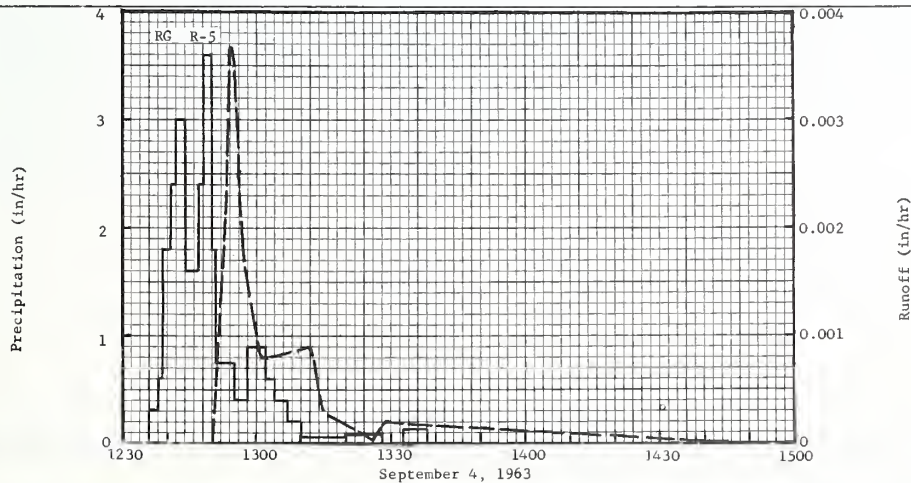
MAXIMUMS FOR PERIOD OF RECORD

1940 to 1963	6-5 1942	1.90	6-16 1942	.488	6-16 1942	.504	6-16 1942	.504	6-16 1942	.504	6-16 1942	.504	6-16 1942	.504	6-5 1942	1.002
-----------------	-------------	------	--------------	------	--------------	------	--------------	------	--------------	------	--------------	------	--------------	------	-------------	-------

Notes: Watershed conditions: 89% cultivated; contour strips with a rotation of corn, small grain and clover. 9% pasture usually good cover, 2% woodland. 1/ Precipitation obtained from rain gage R-5. 2/ Determined from continuous record, 1940-63. 3/ Mean P based on 73-yr (1891-1963) U.S. Weather Bureau record period at Blacksburg, Va. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.

1963 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA WATERSHED W-III				13.02	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of September 4, 1963											
	RG R-5			RG	R-5						
8-7	.47	.0000	9-4	1236	.00	.00	9-4	1250	.0000	.0000	
8-13	.17	.0000		1238	.30	.01		1253	.0023	T	
8-19	.01	.0000		1239	.60	.02		1254	.0037	T	
8-20	.08	.0000		1241	1.80	.08		1255	.0035	.0001	
8-25	.83	.0004		1242	2.40	.12		1256	.0025	.0001	
8-26	.51	.0013		1244	3.00	.22		1257	.0017	.0001	
9-4	4/.25	.0000		1247	1.60	.30		1301	.0008	.0002	
				1248	2.40	.34		1312	.0009	.0003	
				1250	3.60	.46		1315	.0003	.0003	
				1251	1.80	.49		1319	.0002	.0003	
				1255	.75	.54		1326	T	.0003	
				1258	.40	.56		1329	.0002	.0003	
				1302	.90	.62		1445	.0000	.0003	
				1304	.60	.64					
				1307	.40	.66					
				1310	.20	.67					
				1320	.06	.68					
				1328	.08	.69					
				1333	.00	.69					
				1338	.12	.70					

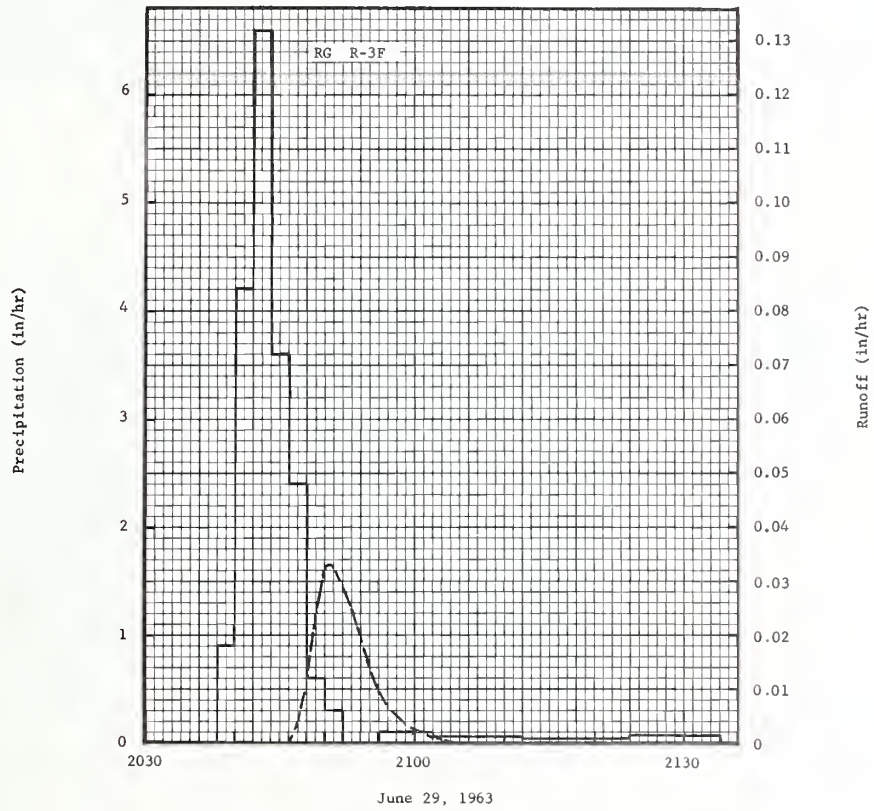
NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 19.46. FOR MAP, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 13.2-4. 4/ .23 IN. FROM 0148 TO 0644 AND .02 IN. FROM 0806 TO 0847.



BLACKSBURG, VIRGINIA WATERSHED W-III

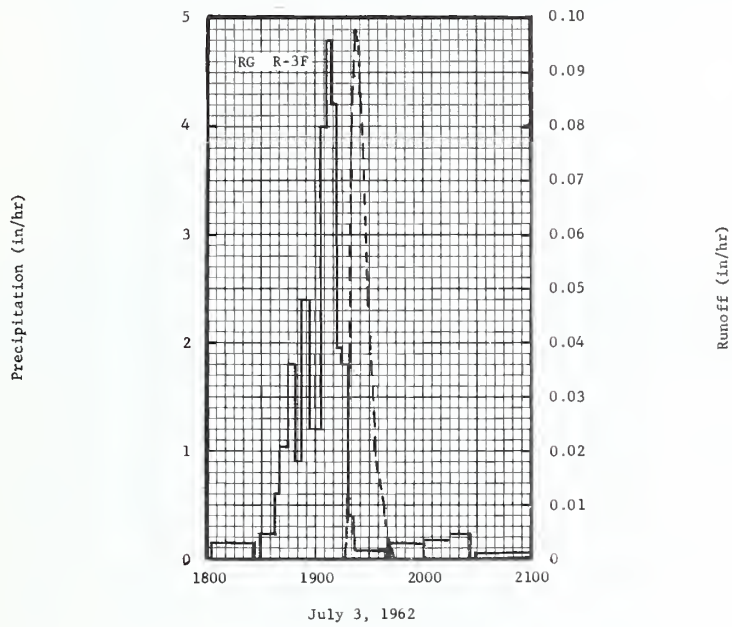
Cooperative Research Project of USDA and Virginia Agricultural Experiment Station

MONTHLY PRECIPITATION AND RUNOFF (inches)							BLACKSBURG, VIRGINIA WATERSHED W-IV AREA—3.49 ACRES								13.03	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC	ANNUAL		
1963	P1/ Q	1.39 .00	1.30 .06	4.24 .09	1.18 .00	2.59 .00	2.12 T	2.41 .00	1.27 .00	3.44 .00	.10 .00	3.29 .00	1.60 .00	24.93 .15		
STA AV ^{2/} (52-63) Q	P	2.36 .02	3.14 .02	3.49 .01	2.91 .01	3.16 .02	3.37 .01	3.00 .01	3.33 .04	3.05 .02	2.13 T	2.33 T	2.84 T	35.11 .16		
MEAN P ^{3/} 73 YR		3.17	3.08	3.67	3.13	3.70	4.16	4.65	3.94	3.00	2.69	2.39	3.08	40.66		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	2-20	.035	2-20	.028	2-20	.048	3-1	.077	3-1	.086	3-1	.086	3-1	.086	3-1	.086
MAXIMUMS FOR PERIOD OF RECORD																
19 52 to 19 63	5-5 1958	.75	5-5 1958	.206	5-5 1958	.213	5-5 1958	.228	5-5 1958	.241	5-5 1958	.241	5-5 1958	.244	5-5 1958	.244
Notes: Watershed conditions: All cultivated; contour strips with rotation of corn, small grain and hay. A mulch tillage program is practiced. No crop is removed except one clover hay crop each year. 1/ Precipitation obtained from rain gage R-3F. 2/ Determined from continuous records 1952-63. 3/ Mean P based on 73-yr (1891-1963) U.S. Weather Bureau record period at Blacksburg, Va. Missing records for 11 months were estimated from nearby Weather Bureau records Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.																
1963 SELECTED RUNOFF EVENT							BLACKSBURG, VIRGINIA WATERSHED W-IV								13.03	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 29, 1963																
5-29	RG R-3F .33	.00	6-29	RG	R-3F	.00	6-29	2046	.0000	.0000						
6-3	.46	.00		2038	.90	.03		2047	.0040	T						
Watershed conditions: 49% in spring oats 30 to 36 in. high, and clover 3 to 4 in. high. Oats beginning to ripen; 21% in second growth, second year clover 6 to 8 in. high; 30% in corn about 16 in. high, seeded in sod mulch.				2042	4.20	.17		2048	.0117	.0001						
				2044	6.60	.39		2049	.0242	.0004						
				2046	3.60	.51		2050	.0321	.0009						
				2048	2.40	.59		2051	.0321	.0014						
				2050	.60	.61		2052	.0293	.0019						
				2052	.30	.62		2053	.0242	.0023						
				2056	.00	.62		2055	.0134	.0029						
				2102	.10	.63		2056	.0099	.0031						
				2112	.06	.64		2057	.0065	.0032						
				2124	.05	.65		2059	.0031	.0034						
				2134	.06	.66		2100	.0020	.0034						
								2103	.0006	.0035						
								2105	.0000	.0035						
NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 3.519. FOR MAP, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 13.2-4																



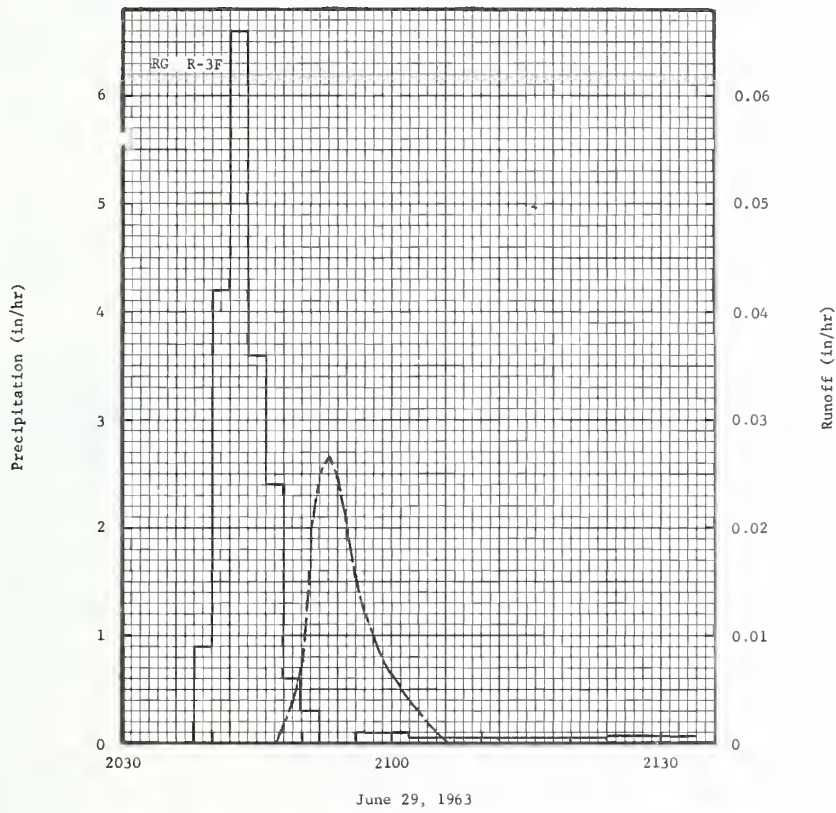
BLACKSBURG, VIRGINIA WATERSHED W-IV

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA AREA—6.08 ACRES						WATERSHED W-V		13.04		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/ Q	1.39 .00	1.30 .10	4.24 .23	1.18 .00	2.59 .00	2.12 .00	2.41 .00	1.27 .00	3.44 .00	.10 .00	3.29 .00	1.60 .00	24.93 .33			
STA AV2/ P (52-63) Q	2.36 .03	3.14 .02	3.49 .02	2.91 T	3.16 .01	3.37 .01	3.00 T	3.33 .02	3.05 .01	2.13 T	2.33 T	2.84 .01	35.11 .13			
MEAN P 3/ 73 YR	3.17	3.08	3.67	3.13	3.70	4.16	4.65	3.94	3.00	2.69	2.39	3.08	40.66			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		6 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-1	.054	3-1	.048	3-1	.088	3-1	.184	3-1	.230	3-1	.230	3-1	.230	3-1	.230
MAXIMUMS FOR PERIOD OF RECORD																
19 52 TO 19 63	5-5 1958	.704	5-5 1958	.154	5-5 1958	.157	3-1 1963	.184	3-1 1963	.230	3-1 1963	.230	3-1 1963	.230	3-1 1963	.230
NOTES: Watershed conditions: All cultivated; contour strips with a rotation of corn, small grain and clover. A mulch tillage program is practiced. No crop residue is removed except one clover hay crop each year. 1/ Precipitation obtained from rain gage R-3F. 2/ Determined from continuous records 1952-63. 3/ Mean P based on 73-yr (1891-1963) U. S. Weather Bureau record period at Blacksburg, Va. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.																
19624/ SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA						WATERSHED W-V		13.04		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 3, 1962																
RG R-3F				RG	R-3F											
6-11	.13	.00	7-3	1802	.00	.00	7-3	1916	.0000	.0000						
6-12	.69	.00		1826	.13	.05		1917	.0023	.0023	T					
6-13	.01	.00		1829	.00	.05		1918	.0113	.0001						
6-20	.36	.00		1838	.22	.09		1919	.0359	.0005						
6-22	.29	.00		1840	.60	.11		1920	.0721	.0014						
6-26	.17	.00		1844	1.05	.18		1921	.0897	.0027						
7-1	.06	.00		1848	1.80	.30		1922	.0972	.0043						
7-2	.10	.00		1852	.90	.46		1923	.0972	.0059						
7-3	5/.01	.00		1856	2.40	.62		1924	.0935	.0075						
				1900	1.20	.70		1925	.0860	.0090						
Watershed conditions: 32.2% corn 40 to 50 in. high with some grass and weeds; 24.8% spring oats, maturing, seeded with clover and grasses, good cover; 33.6% second year clover, 5 in. top growth following hay cutting of 6-25-62, good cover; 9.4% grassed waterway--good cover.																
				1904	1.20	.78		1929	.0483	.0135						
				1907	4.00	.98		1930	.0406	.0142						
				1909	4.80	1.14		1934	.0184	.0162						
				1911	4.20	1.28		1937	.0099	.0169						
				1915	1.95	1.41		1940	.0038	.0172						
				1918	1.80	1.50		1942	.0011	.0173						
				1921	.40	1.52		1944	.0000	.0173						
				1939	.08	1.54										
				1941	.00	1.54										
				2002	.11	1.58										
				2015	.19	1.12										
				2026	.22	1.66										
				2029	.00	1.66										
				2147	.05	1.72										
NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 6.131. FOR MAP, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 13.2-4. 4/ NO SUITABLE EVENT OCCURRED IN 1963. 5/ FROM 1304 TO 1320.																



BLACKSBURG, VIRGINIA WATERSHED W-V

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA WATERSHED W-VI AREA—7.70 ACRES								13.05		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/ Q	1.39 .01	1.30 .17	4.24 .24	1.18 .00	2.59 .00	2.12 T	2.41 .00	1.27 .00	3.44 .00	.10 .00	3.29 .00	1.60 .00	24.93 .42			
STA AV2/ P (52-63) Q	2.36 .04	3.14 .07	3.49 .07	2.91 .05	3.16 .04	3.37 .02	3.00 .02	3.33 .07	3.05 .04	2.13 .01	2.33 .01	2.84 .06	35.11 .50			
MEAN P 3/ 73 YR	3.17	3.08	3.67	3.13	3.70	4.16	4.65	3.94	3.00	2.69	2.39	3.08	40.66			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	2-20	.074	2-20	.070	2-20	.121	2-20	.168	2-20	.168	2-20	.168	2-20	.168	2-20	.168
MAXIMUMS FOR PERIOD OF RECORD																
1952 TO 1963	5-5 1958	.953	8-8 1958	.273	8-8 1958	.300	5-5 1958	.320	5-5 1958	.347	5-5 1958	.386	5-5 1958	.443	5-5 1958	.456
NOTES: Watershed conditions: All cultivated, contour strips with a rotation of corn, small grain, and clover. A mulch tillage program is practiced. No crop residue is removed except one clover hay crop each year. 1/ Precipitation obtained from rain gage R-3F. 2/ Determined from continuous records 1952-1963. 3/ Mean P based on 73-yr (1891-1963) U. S. Weather Bureau record period at Blacksburg, Va. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.																
1963 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA WATERSHED W-VI								13.05		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG R-3F				Event of June 29, 1963											
	R-3F			RG	R-3F											
5-29	.33	.00	6-29	2038	.00	.00	6-29	2047	.0000	.0000						
6-3	.46	.00		2040	.90	.03		2049	.0045	.0045	T					
				2042	4.20	.17		2050	.0079	.0001						
				2044	6.60	.39		2051	.0187	.0003						
				2046	3.60	.51		2052	.0249	.0007						
Watershed conditions: 34.3% in spring oats 30 to 36 in. high and clover 3 to 4 in. high. Oats beginning to ripen, fair cover; 22% in second growth, second year clover 6 to 8 in. high; 28.9% in corn about 16 in. high, seeded in sod mulch, good cover; 14.8% is grassed waterway, good cover.																
				2048	2.40	.59		2053	.0267	.0011						
				2050	.60	.61		2054	.0249	.0015						
				2052	.30	.62		2055	.0201	.0019						
				2056	.00	.62		2056	.0158	.0022						
				2102	.10	.63		2057	.0121	.0024						
				2112	.06	.64		2059	.0079	.0027						
				2124	.05	.65		2100	.0061	.0028						
				2134	.06	.66		2102	.0037	.0030						
								2104	.0018	.0031						
								2105	.0009	.0031						
								2106	.0000	.0031						
NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 7.764. FOR MAP, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 13.2-4.																



BLACKSBURG, VIRGINIA WATERSHED W-VI

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA AREA—3,054 ACRES (4.77 SQ. MILES)						THORNE CREEK WATERSHED W-I 13.06				
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963	1.22 .54	1.53 .40	4.69 1.07	1.16 .45	3.07 .26	1.11 .12	1.75 .05	1.13 .03	3.92 .04	T .03	3.65 .03	1.68 .03	24.91 3.05			
STA AVG ² / _P (57-63) ₀	1.74 .46	2.80 .50	3.84 .88	2.84 .99	3.89 .77	2.64 .43	3.32 .28	3.73 .29	3.83 .18	2.41 .17	2.78 .17	3.19 .31	37.01 5.43			
MEAN P ³ / _{58 YR}	2.91	2.68	3.28	2.76	3.27	3.43	4.20	3.32	2.76	2.70	2.21	2.83	36.35			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1963	2-20	.01	2-20	.01	2-20	.04	2-20	.04	2-20	.05	3-17	.08	3-17	.13	3-12	.43
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO 1963	5-17 1958	.12	5-17 1958	.10	5-17 1958	.18	5-17 1958	.30	5-17 1958	.34	5-17 1958	.38	5-17 1958	.47	3-30 1960	1.09
Notes: Watershed conditions: Pasture, usually good cover of bluegrass and other native grasses and clovers, 64%; alfalfa and other hay crops, 21%; corn, 8%; small grain, 1%; farm woods, 4%; idle, 1%; roads, 1%. (Total cultivated, 30%) ¹ / Precipitation Thiessen weighted from R-1, R-2, and R-3. ² / Determined from continuous records from June 1957 through 1963; precipitation Thiessen weighted. ³ / Mean P based on 58-yr (1906-63) U.S. Weather Bureau record period at Claytor Dam, Radford, Va.																

1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA						THORNE CREEK WATERSHED W-I		13.06
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.23S	.55	.00	.00	.00	.00	T	.00	.00	.61	.00		
2	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00		
3	.00	.00	.00	.00	.00	.36	.00	.00	.00	.00	.00	.00		
4	.00	.00	.00	.00	.00	.00	.00	.00	.50	.00	.00	.00		
5	.00	.00	.50	.00	.00	.00	.00	.00	.93	.00	.59	.00		
6	.00	.00	.41	.00	.00	.00	.51	.00	.20	.00	.57	.00		
7	.00	.00	.00	.00	.00	.01	.01	.29	.00	.00	.01	.00		
8	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.26		
9	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00		
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
11	.33	.06M	1.02N	.00	.00	.00	.00	.00	.00	.00	.00	.19		
12	.07	.45M	.71	.00	.00	.00	.01	.00	.00	.00	.00	.09		
13	.03	.00	.01	T	.00	.00	.01	.10	.35	.00	.00	.06		
14	.00	.02	.00	.00	.00	.00	.43	.00	.10	.00	.00	.06		
15	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.01		
16	.00	.00	.26	.00	.61	.07	.00	.00	.00	.00	.00	.00		
17	.00	.00	.84	.00	1.18	.00	.00	.00	.00	.00	.00	.00		
18	.12	.00	.03	.00	.01	.00	.01	.00	.00	.00	.00	.00		
19	.29	.57S	.22	.00	.00	.00	.00	.00	.00	.00	.00	.00		
20	.15	.00	.02	.00	.00	.27	.31	.09	.00	.00	.00	.00		
21	.00	.00	.01	.00	.10	.04	.00	.00	.00	.00	.00	.00		
22	.00	.00	.00	.27	.00	.00	.00	.00	.00	.00	.00	.00		
23	.08M	.00	.00	.00	.00	.00	.00	.00	.00	T	.19	.88S		
24	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00		
25	.00	.00	.00	.00	.05	.00	.00	.34	.00	.00	.00	.00		
26	.02M	.11S	.11	.00	T	.00	.00	.02	.00	.00	.00	.00		
27	.05M	.00	.00	.00	.61	.14	.06	.00	.00	.00	.00	.00		
28	.00	.00	.00	.00	.12	.00	.00	.00	1.59	.00	T	.00		
29	.00	-----	.00	.69	.35	.22	.05	.29	.25	.00	1.67	.00		
30	.02M	-----	.00	.15	.00	.00	.17	.00	.00	.00	.00	.00		
31	.00	-----	.00	-----	.00	-----	.09	.00	-----	.00	-----	.13M		
TOTAL	1.22	1.53	4.69	1.16	3.07	1.11	1.75	1.13	3.92	T	3.65	1.68		
STA AV	1.74	2.80	3.84	2.84	3.89	2.64	3.32	3.73	3.83	2.41	2.78	3.19		
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM GAGES R-1, R-2 AND R-3. FOR DRAINAGE PATTERN OF WATERSHED SEE HYDROLOGIC DATA FOR AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, MISC. PUB. 945, P. 13.6-5.														

1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA THORNE CREEK WATERSHED W-I 13.06						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	2.25	2.25	6.77	2.86	1.35	.80	.31	.12	.18	.12	.12	.09
2	2.19	1.57	1.91	2.74	1.23	.74	.28	.12	.18	.12	.12	.09
3	2.06	1.60	1.85	2.62	1.14	.89	.28	.12	.18	.12	.12	.09
4	1.97	1.51	1.88	2.49	1.11	.83	.25	.09	.22	.12	.09	.09
5	1.94	1.48	2.22	2.43	1.11	.68	.25	.09	.22	.12	.09	.09
6	1.94	1.48	3.36	2.43	1.08	.68	.28	.09	.25	.12	.18	.09
7	1.97	1.48	2.83	2.34	1.02	.68	.31	.12	.22	.12	.12	.09
8	2.00	1.48	2.62	2.25	1.02	.65	.25	.12	.22	.12	.12	.09
9	2.09	1.48	2.49	2.25	1.02	.68	.22	.09	.18	.12	.09	.09
10	2.09	1.48	2.34	2.09	1.02	.68	.22	.09	.18	.09	.09	.09
11	2.37	1.48	2.68	2.00	1.02	.55	.22	.09	.18	.09	.09	.09
12	2.59	1.66	8.04	1.94	.99	.52	.22	.09	.18	.09	.09	.09
13	2.56	1.51	6.22	1.94	.99	.52	.22	.09	.18	.09	.09	.09
14	2.40	1.48	5.57	1.94	.99	.49	.28	.09	.22	.09	.09	.09
15	2.37	1.48	5.14	1.91	.99	.43	.22	.12	.18	.09	.09	.09
16	2.28	1.66	5.14	1.88	1.17	.43	.22	.12	.18	.09	.09	.09
17	2.22	1.97	9.67	1.82	1.76	.43	.22	.15	.15	.12	.09	.09
18	2.09	2.00	7.51	1.76	1.11	.43	.22	.18	.12	.09	.12	.09
19	2.16	1.48	7.58	1.63	1.05	.40	.22	.18	.12	.12	.09	.09
20	2.40	7.30	6.62	1.54	.99	.77	.25	.18	.12	.12	.06	.09
21	2.03	2.03	5.85	1.54	1.02	.37	.22	.18	.12	.12	.06	.09
22	1.97	1.82	5.17	1.72	.95	.37	.22	.18	.12	.12	.06	.09
23	1.97	1.72	4.68	1.54	.92	.34	.22	.18	.12	.12	.06	.09
24	1.97	1.60	4.37	1.48	.92	.31	.22	.18	.12	.12	.06	.09
25	1.97	1.51	4.06	1.45	.89	.31	.18	.18	.12	.12	.06	.09
26	2.00	1.48	4.03	1.39	.86	.31	.15	.18	.12	.09	.06	.15
27	2.25	1.57	3.63	1.35	1.08	.34	.15	.18	.12	.09	.06	.25
28	2.31	1.48	3.42	1.35	1.02	.31	.12	.18	.12	.09	.06	.31
29	3.14	-----	3.23	1.60	1.20	.43	.12	.18	.37	.09	.59	.34
30	3.08	-----	3.02	1.51	.92	.34	.12	.18	.12	.12	.15	.40
31	2.83	-----	2.96	-----	.83	-----	.12	.18	-----	.12	-----	.59
MEAN	2.24	1.82	4.41	1.93	1.06	.52	.22	.14	.17	.11	.11	.14
INCHES	.54	.40	1.07	.45	.26	.12	.05	.03	.04	.03	.03	.03

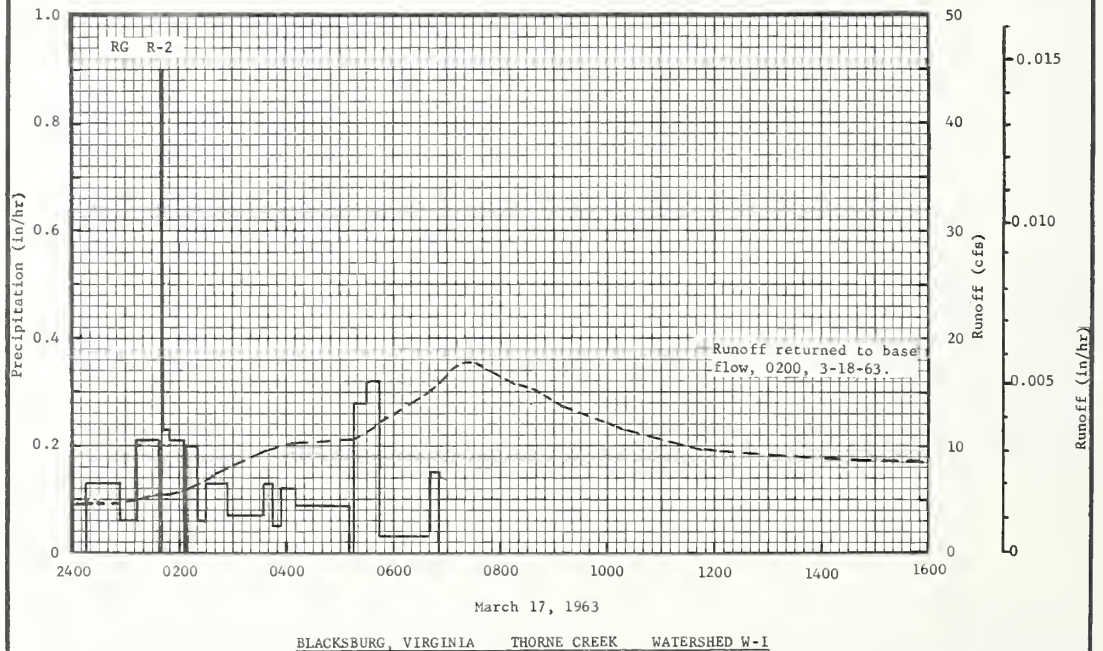
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0077935.

1963 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				THORNE CREEK WATERSHED W-I				13.06
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of March 17 and 18, 1963											
3-17	RG R-2 .00	1/.0016	3-17	RG 0016	R-2 .00	.00	3-17	0100	4.927	.0000	
				0052	.13	.08		0136	5.266	.0010	
	RG R-3			0112	.06	.10		0150	5.666	.0014	
3-17	.00			0138	.21	.19		0238	7.052	.0031	
				0140	.00	.19		0340	9.639	.0059	
				0142	.90	.22		0406	10.131	.0073	
				0150	.23	.25		0512	10.655	.0110	
				0204	.21	.30		0534	11.702	.0123	
				0208	.00	.30		0552	12.841	.0135	
Watershed conditions: 64%				0220	.20	.34		0640	15.059	.0171	
pasture, fair cover of dormant				0230	.06	.35		0712	17.460	.0200	
native grasses and clovers; 21%				0254	.13	.40		0732	17.645	.0219	
alfalfa and other hay mixtures,				0335	.07	.45		0744	17.029	.0230	
2 to .3 inch growth, dormant,				0344	.13	.47		0808	16.013	.0251	
fair cover; 5% corn stubble,											
poor cover; 5% idle with good				0355	.05	.48		0840	15.120	.0278	
cover of dormant weeds and grass;				0410	.12	.51		0908	13.765	.0300	
4% farm woods lots; 1% roads.				0450	.09	.57		1020	11.425	.0349	
				0510	.09	.60		1200	9.731	.0407	
				0515	.00	.60		1440	8.746	.0487	
				0530	.28	.67		1644	8.284	.0544	
				0545	.32	.75		1808	8.315	.0582	
				0642	.03	.78		2400	8.037	.0738	
				0650	.15	.80	3-18				
								0200	2/ 7.760	.0789	

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0003247. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ PRIOR TO 0100. 2/ NORMAL BASE FLOW.

1963			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA		THORNE CREEK WATERSHED W-I		13.06
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
			Event of March 17 and 18, 1963 - Continued								
			3-17	RG	R-3						
				0010	.00	.00					
				0025	.16	.04					
				0035	.06	.05					
				0050	.12	.08					
				0105	.08	.10					
				0120	.08	.12					
				0135	.28	.19					
				0137	.00	.19					
				0140	1.00	.24					
				0200	.21	.31					
				0221	.14	.36					
				0229	.00	.36					
				0240	.11	.38					
				0244	.00	.38					
				0250	.20	.40					
				0310	.09	.43					
				0335	.12	.48					
				0341	.20	.50					
				0355	.04	.51					
				0412	.11	.54					
				0445	.18	.64					
				0505	.06	.66					
				0507	.60	.68					
				0513	.00	.68					
				0540	.31	.82					
				0545	.12	.83					
				0640	.01	.84					
				0648	.15	.86					
				0653	.24	.88					
				RG	R-1	.78					
				3 RG	AVG 1/	.84					

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0003247. 1/ THIESSEN WEIGHTED FOR R-1, R-2, AND R-3.



MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA						CRAB CREEK WATERSHED W-1		13.07
						AREA—786 ACRES (1.23 SQ. MILES)								
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 P 1/	1.13	1.15	4.07	.98	2.55	.81	4.01	1.46	3.34	.08	3.53	1.67	24.78	
Q	.62	.42	1.28	.40	.27	.16	.17	.13	.12	.11	.12	.11	3.91	
STA AV 2/ P	1.75	2.78	3.57	2.56	3.16	2.59	3.72	2.71	3.24	2.44	2.77	3.06	34.35	
(57-63) Q	.73	.87	1.44	1.22	.80	.39	.34	.34	.27	.28	.32	.62	7.62	
MEAN P 3/														
73 YR	3.17	3.08	3.67	3.13	3.70	4.16	4.65	3.94	3.00	2.69	2.39	3.08	40.66	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-1	.03	3-1	.03	3-1	.05	3-1	.10	3-1	.12	3-1	.14	3-12	.19	3-12	.51
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO	8-25	.17	4-3	.13	4-3	.22	4-3	.32	4-3	.42	4-3	.52	4-3	.73	3-27	1.76
1963	1961		1960		1960		1960		1960		1960		1960		1960	

Notes: Watershed conditions: Permanent pasture, usually good cover of native bluegrass combined with other grasses and clovers, 55%; alfalfa and other hay crops, 15%; corn, 6%; other, 8%; farm woods (hardwood predominantly), 13%; idle land, 2%; roads, 1%. (Total cultivated, 29%) 1/ Precipitation Thiessen weighted from R-1 and R-2. 2/ Determined from continuous records from Aug. 1957 through 1963; precipitation Thiessen weighted. 3/ Mean P based on 73-yr (1891-1963) U.S. Weather Bureau record period at Blacksburg, Va. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and V. Agr. Expt. Sta. at Blacksburg, Va.

1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA						CRAB CREEK WATERSHED W-1		13.07
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.12N	.50	.00	.00	.00	.37	.00	.00	.00	.96	.00		
2	.00	.12	T	.00	.00	.08	.00	.00	.00	.00	.00	.00		
3	.00	.00	.00	.00	.00	.23	.00	.00	.00	.00	.00	.00		
4	.00	.00	.00	.00	.00	.00	.00	.00	.40	.00	.00	.00		
5	.02	.00	.47	.00	.00	.02	.00	.00	.81	.00	.47	.00		
6	.00	.00	.40	.00	.00	.00	.22	.00	.14	.00	.86	.00		
7	.00	.00	.00	.00	.00	.08	.00	.29	.00	.00	T	.00		
8	.04	.00	.00	.00	.00	T	.00	.00	.00	.00	.00	.20		
9	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00	T		
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
11	.28M	.10	.53	.00	.00	.00	.00	.00	.00	.00	.00	.13		
12	.06M	.25	.89	.00	.00	.00	.03	.00	.00	.00	.00	.15		
13	.11	.00	.01	.05	.00	.00	.06	.08	.18	.00	.00	.04		
14	.00	.00	.00	.00	.03	.00	.35	.00	.14	.00	.00	.07		
15	.00	.00	.00	.00	T	.00	.00	.00	.00	.00	.00	.00		
16	.00	.00	.20	.00	.44	.11	.00	.00	.00	.00	.00	.00		
17	.00	.00	.71	.00	1.11	.00	.00	.00	.00	.00	.00	.00		
18	.14	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00		
19	.18M	.39	.10	.00	.00	.00	.03	.00	.00	.00	.00	.00		
20	.11	.00	T	.00	.00	.21	.09	.09	.00	.00	.00	.00		
21	.00	.00	.03	.00	T	.07	.00	.00	.00	.00	.00	.00		
22	.00	.00	.00	.08	.00	.00	.35	.00	.00	.00	.00	.00		
23	.06	.00	.00	.00	.00	.00	.95	.00	.00	.04	.28	.92		
24	.00	.00	.00	.00	.00	.00	.10	.00	.00	.01	.00	.00		
25	.00	.00	.00	.00	.00	.00	T	.47	.00	.00	.00	.00		
26	.02	.17	.19	.00	.05	.00	.00	.32	.00	.00	.04	.00		
27	.05	.00	.00	.00	.29	.00	.00	.00	.00	.00	.00	.00		
28	.00	.00	.00	.00	.06	.00	.94	.00	1.35	T	.01	.00		
29	.00	-----	.00	.61	.56	.01	.38	.21	.32	.03	.91	.00		
30	.06	-----	.00	.18	.01	.00	.01	.00	.00	.00	.00	.00		
31	.00	-----	.04	-----	.00	-----	T	.00	-----	.00	-----	.16M		
TOTAL	1.13	1.15	4.07	.98	2.55	.81	4.01	1.46	3.34	.08	3.53	1.67		
STA AV	1.75	2.78	3.57	2.56	3.16	2.59	3.72	2.71	3.24	2.44	2.77	3.06		

NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM GAGES R-1 AND R-2. STA AV IS FOR PERIOD AUGUST 1957 THROUGH 1963. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.7-6.

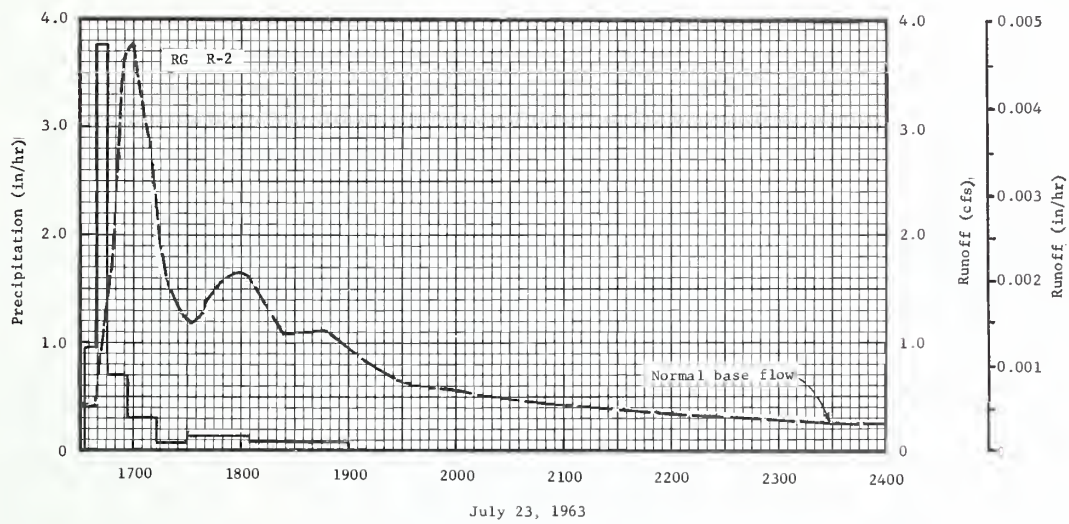
1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA CRAB CREEK WATERSHED W-1 13.07						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.54	.39	4.13	.62	.40	.24	.16	.19	.11	.13	.21	.12
2	.48	.42	1.24	.59	.35	.22	.17	.19	.11	.13	.12	.12
3	.48	.43	.70	.56	.35	.24	.16	.16	.11	.13	.11	.12
4	.48	.37	.71	.56	.35	.22	.16	.13	.12	.13	.12	.11
5	.45	.36	1.20	.56	.35	.22	.14	.13	.21	.13	.14	.11
6	.61	.36	2.62	.56	.33	.20	.13	.13	.20	.13	.35	.11
7	.75	.36	1.16	.52	.28	.20	.13	.17	.13	.13	.16	.11
8	.82	.36	.90	.48	.25	.20	.13	.16	.13	.13	.12	.13
9	.94	.35	.78	.44	.25	.19	.13	.13	.12	.13	.11	.12
10	.79	.35	.67	.44	.25	.17	.13	.13	.11	.13	.11	.11
11	1.54	.35	.76	.44	.25	.18	.13	.13	.11	.13	.11	.11
12	1.52	.40	4.00	.44	.25	.16	.13	.13	.11	.13	.11	.14
13	1.22	.37	2.31	.44	.25	.16	.13	.13	.11	.13	.11	.11
14	.73	.39	1.47	.44	.25	.16	.16	.13	.11	.12	.11	.11
15	.63	.39	1.20	.42	.25	.16	.13	.13	.11	.11	.11	.11
16	.57	.37	1.31	.42	.31	.18	.13	.13	.12	.11	.11	.11
17	.55	.35	3.36	.41	.52	.19	.13	.13	.13	.11	.11	.11
18	.66	.41	1.63	.39	.31	.19	.13	.13	.13	.11	.11	.11
19	.70	2.90	1.55	.39	.25	.17	.13	.11	.13	.11	.11	.11
20	.93	.63	1.35	.39	.25	.16	.13	.12	.13	.11	.11	.11
21	.67	.47	1.21	.39	.25	.16	.13	.13	.13	.11	.11	.11
22	.56	.44	1.17	.41	.25	.16	.19	.13	.13	.11	.11	.11
23	.50	.39	1.01	.37	.25	.16	.46	.13	.12	.11	.14	.11
24	.44	.54	.94	.35	.24	.16	.21	.13	.11	.11	.11	.11
25	.44	.41	.90	.35	.22	.16	.19	.13	.11	.11	.11	.11
26	.44	.42	.79	.35	.22	.16	.19	.21	.11	.11	.11	.11
27	.44	.39	.76	.35	.28	.16	.17	.16	.11	.11	.11	.11
28	.44	.35	.70	.35	.25	.14	.78	.16	.18	.11	.11	.11
29	.41	-----	.65	.40	.33	.13	.28	.16	.34	.11	.32	.11
30	.39	-----	.62	.48	.32	.13	.25	.14	.13	.11	.16	.11
31	.39	-----	.62	-----	.28	-----	.21	.12	-----	.11	-----	.12
MEAN	.66	.49	1.37	.44	.29	.18	.19	.14	.13	.12	.13	.11
INCHES	.62	.42	1.28	.40	.27	.16	.17	.13	.12	.11	.12	.11

NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.030282.

1963			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA				CRAB CREEK WATERSHED W-1 13.07			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)				
Event of July 23, 1963														
7-23	RG R-2 .00	1/.0063	7-23	RG	R-2		7-23							
				1633	.00	.00		1639	.404	.0000				
				1638	.96	.08		1640	.682	T				
				1645	3.77	.52		1648	1.878	.0002				
				1657	.70	.66		1655	3.606	.0006				
				1713	.30	.74		1700	3.780	.0010				
				1730	.07	.76		1705	3.107	.0014				
				1805	.14	.84		1710	2.711	.0017				
				1900	.09	.92		1714	1.997	.0019				
Watershed conditions: 55% permanent pasture, good cover of native grasses and clovers; 15% alfalfa and grass-clover hay crops, excellent cover; 6% corn, 5 to 6 feet high; 8% small grain and other cultivated areas; 13% farm woods, good cover; 2% idle land; 1% roads.								1718	1.538	.0020				
								1732	1.189	.0024				
								1738	1.260	.0026				
								1740	1.387	.0027				
				RG	R-1	1.20		1748	1.561	.0029				
				2 RG	AVG 2/	.95		1756	1.664	.0032				
								1804	1.633	.0035				
								1824	1.086	.0040				
								1844	1.102	.0045				
								1928	.666	.0053				
								2000	.555	.0057				
								2052	.428	.0063				
								2200	.341	.0068				
								2328	3/.254	.0074				
								2400	.254	.0076				

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0012618. 1/ PRIOR TO 1639. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 2/ THIESSEN WEIGHTED FOR RG R-1 AND R-2. 3/ NORMAL BASE FLOW.

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0012618. 1/ PRIOR TO 1639. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 2/ THIESSEN WEIGHTED FOR RG R-1 AND R-2. 3/ NORMAL BASE FLOW.



BLACKSBURG, VIRGINIA CRAB CREEK WATERSHED W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA BRUSH CREEK WATERSHED W-I AREA—893 ACRES (1.40 SQ. MILES)								13.08		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/ Q	1.10 1.69	1.53 1.33	4.33 2.93	.91 1.24	2.62 1.11	2.05 .77	1.93 .52	1.40 .39	3.76 .55	.13 .46	3.91 .77	1.91 .65	25.58 12.41			
STA AV2/ (57-63) Q	1.90 1.83	3.15 2.23	3.55 2.74	2.98 2.32	3.70 1.89	2.51 1.14	3.45 1.02	3.71 1.02	4.53 1.52	2.55 1.38	2.97 1.47	3.28 1.93	38.28 20.49			
MEAN P3/ 73 YR	3.17	3.08	3.67	3.13	3.70	4.16	4.65	3.94	3.00	2.69	2.39	3.08	40.66			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-1	.04	3-1	.04	3-1	.08	3-1	.16	3-1	.22	3-12	.35	3-12	.49	3-12	1.09
MAXIMUMS FOR PERIOD OF RECORD																
1957 to 1963	9-30 1959	1.16	9-30 1959	.62	9-30 1959	.91	9-30 1959	1.62	9-30 1959	2.17	9-29 1959	2.59	9-29 1959	2.81	9-29 1959	3.23
Notes: Watershed conditions: Permanent pasture, usually a fair cover of native grasses, 34%; alfalfa and other hay crops, 18%; corn, 5%; small grain, 2%; farm woods, a mixture of hardwoods and conifers, 32%; idle, 8%; roads, 1%. (Total cultivated, 27%) 1/ Precipitation Thiessen weighted from R-1 and R-2. 2/ Determined from continuous records from August 1957 through 1963; precipitation Thiessen weighted. 3/ Mean P based on 73-yr (1891-1963) U. S. Weather Bureau record period at Blacksburg, Va. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.																
1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA BRUSH CREEK WATERSHED W-I								13.08		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1	.00	.18N	.60	.00	.00	.00	.09	.00	.00	.00	.72	.00				
2	.00	.19	.00	.00	.00	.43	.00	.00	.00	.00	.01	.00				
3	.00	.00	.00	.00	.00	.15	.00	.00	.00	.00	.00	.00				
4	.00	.00	.00	.00	.00	.00	.00	.00	.33	.00	.00	.00				
5	.01	.00	.54	.00	.00	.00	.00	.00	.63	.00	.41	.00				
6	.01	.00	.48	.00	.00	.00	.18	.00	.07	.00	1.42	.00				
7	.01	.00	.00	.00	.00	.22	.00	.17	.00	.00	.02	.00				
8	.06	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.19				
9	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00	.00				
10	.01	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00				
11	.24	.24	.33	.00	.00	.00	.00	.00	.00	.00	.00	.05				
12	.04	.27M	1.23	.00	.00	.00	.24	.00	.00	.00	.00	.20				
13	.07	.00	.00	.11	.00	.00	.11	.30	.79	.00	.00	.05				
14	.00	.04S	.00	.00	.00	.00	.34	.00	.15	.00	.00	.09				
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
16	.00	.00	.23	.00	.48	.14	.00	.00	.00	.00	.00	.00				
17	.00	.00	.58	.00	1.05	.00	.15	.00	.00	.00	.00	.00				
18	.14	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00				
19	.24	.39M	.16	.00	.00	.00	.01	.00	.00	.00	.00	.00				
20	.09	.00	.00	.00	.00	.90	.18	.00	.00	.00	.00	.00				
21	.00	.00	.00	.00	.08	.17	.00	.00	.03	.00	.03	.00				
22	.00	.00	.00	.12	.04	.00	.07	.00	.11	.00	.00	.00	T			
23	.03	.00	.00	.00	.00	.00	.00	.00	.00	.11	.24	.87				
24	.00	.07S	.00	.00	.00	.00	.35	.00	.00	.01	.00	.01				
25	.00	.00	.00	.00	.01	.00	.00	.13	.00	.00	.00	.00				
26	.02	.15S	.18	.00	.01	.00	T	.72	.00	.00	.04	.00				
27	.05	.00	.00	.00	.34	.00	.00	.00	.00	.00	.00	.00				
28	.00	.00	.00	.00	.18	.00	T	.00	1.47	.00	.01	.00				
29	.00	-----	.00	.58	.43	.00	.14	.06	.18	.01	1.01	.00				
30	.08	-----	.00	.03	.00	.03	.00	.01	.00	.00	.00	.00				
31	.00	-----	.00	-----	.00	-----	.01	.00	-----	.00	-----	.45M				
TOTAL	1.10	1.53	4.33	.91	2.62	2.05	1.93	1.40	3.76	.13	3.91	1.91				
STA AV	1.90	3.15	3.55	2.98	3.70	2.51	3.45	3.71	4.53	2.55	2.97	3.28				
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM GAGES R-1 AND R-2. FOR DRAINAGE PATTERN OF WATERSHED SEE HYDROLOGIC DATA FOR AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, MISC. PUB. 945, P. 13.8-5.																

1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA BRUSH CREEK WATERSHED W-I						13.08
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	1.74	1.61	9.11	1.76	1.44	1.02	.65	.53	.43	.60	1.19	.97
2	1.74	2.41	3.47	1.76	1.36	1.25	.68	.44	.42	.59	.93	.90
3	1.74	2.05	2.29	1.73	1.31	1.94	.58	.41	.42	.55	.64	.87
4	1.74	1.66	2.44	1.68	1.28	1.28	.54	.41	.59	.55	.61	.79
5	1.68	1.66	3.90	1.66	1.25	1.13	.54	.39	1.43	.55	.78	.77
6	1.99	1.62	9.51	1.60	1.22	1.04	.64	.37	.97	.55	4.06	.77
7	2.13	1.56	3.35	1.60	1.22	1.14	.69	.50	.64	.56	1.44	.77
8	2.13	1.49	2.54	1.58	1.16	1.13	.61	.48	.57	.56	.86	.91
9	2.11	1.45	2.31	1.69	1.06	.96	.57	.43	.52	.56	.74	.80
10	2.33	1.44	2.14	1.55	1.08	.87	.54	.46	.49	.56	.70	.73
11	4.49	1.72	2.21	1.49	1.11	.86	.52	.47	.48	.55	.68	.79
12	4.22	2.62	12.62	1.49	1.13	.78	.65	.43	.46	.51	.67	1.22
13	3.04	1.79	5.87	1.58	1.14	.76	.68	.58	1.02	.52	.67	.97
14	2.13	1.68	3.54	1.67	1.13	.76	1.07	.50	1.03	.52	.67	1.03
15	1.84	1.63	2.77	1.54	1.03	.74	.64	.42	.65	.52	.67	.72
16	1.67	1.58	3.11	1.49	1.64	.95	.59	.41	.58	.52	.66	.70
17	1.67	1.56	6.39	1.47	3.76	.91	.69	.37	.53	.52	.66	.70
18	2.01	1.63	3.41	1.46	1.73	.81	.61	.41	.51	.52	.66	.70
19	2.20	3.87	3.30	1.46	1.22	.75	.69	.38	.49	.52	.66	.70
20	2.81	1.93	2.75	1.39	1.11	1.69	.63	.38	.48	.52	.66	.70
21	1.99	1.53	2.41	1.36	1.24	1.52	.66	.38	.49	.52	.66	.70
22	1.74	1.42	2.20	1.56	1.13	.95	.61	.38	.55	.56	.66	.70
23	1.63	1.39	2.15	1.40	1.08	.83	.62	.33	.50	.63	.93	.70
24	1.58	1.40	2.11	1.31	1.04	.77	.90	.32	.50	.60	.78	.70
25	1.48	1.42	2.02	1.31	1.02	.73	.69	.38	.49	.60	.70	.70
26	1.48	1.42	2.40	1.31	1.09	.71	.59	1.23	.48	.58	.70	.70
27	1.64	1.91	2.13	1.31	1.55	.69	.52	.60	.45	.57	.70	.70
28	1.53	2.26	1.94	1.32	1.32	.67	.49	.58	.85	.57	.70	.70
29	1.58	-----	1.86	2.19	2.20	.66	.56	.54	3.09	.57	3.35	.70
30	1.63	-----	1.81	1.84	1.40	.68	.62	.51	.69	.57	1.29	.70
31	1.63	-----	1.81	-----	1.15	-----	.60	.45	-----	.61	-----	.77
MEAN	2.04	1.78	3.54	1.55	1.34	.97	.63	.47	.69	.56	.97	.79
INCHES	1.69	1.33	2.93	1.24	1.11	.77	.52	.39	.55	.46	.77	.65

NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.026654.

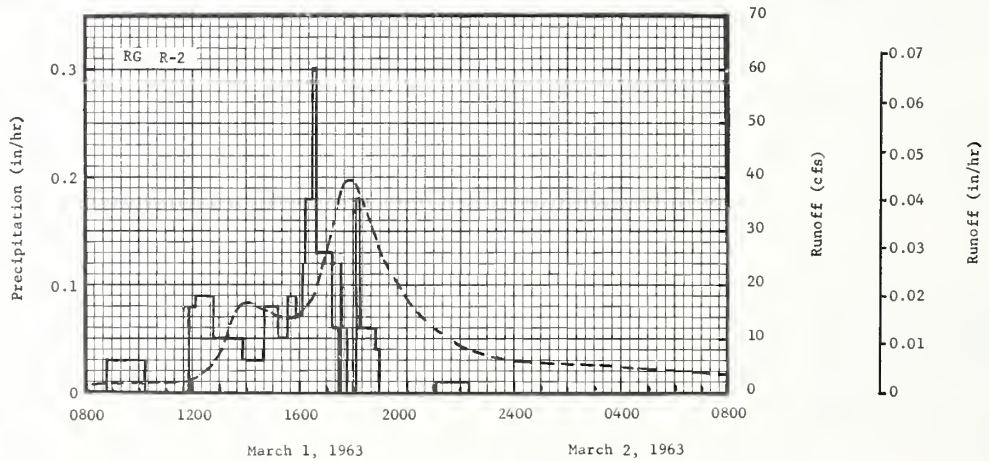
1963 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA BRUSH CREEK WATERSHED W-I						13.08
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)		
Event of March 1 and 2, 1963												
3 -1	RG R-2 .00	1/.0178	3 -1	RG	R-2		3 -1					
				0845	.00	.00		0846	1.738	.0000		
				1015	.03	.04		1012	1.846	.0029		
				1150	.00	.04		1100	1.954	.0045		
				1205	.08	.06		1132	2.071	.0057		
				1245	.09	.12		1148	2.206	.0064		
				1355	.05	.18		1156	2.431	.0067		
				1440	.03	.20		1212	2.836	.0075		
				1510	.08	.24		1236	4.025	.0090		
				1535	.05	.26		1300	6.816	.0114		
				1548	.09	.28		1320	11.508	.0148		
				1605	.07	.30		1326	13.218	.0162		
				1615	.12	.32		1336	14.029	.0187		
				1632	.18	.37		1352	16.127	.0232		
				1638	.30	.40		1408	16.721	.0280		
				1715	.13	.48		1424	16.307	.0329		
				1725	.06	.49		1500	14.875	.0433		
				1730	.00	.49		1520	14.164	.0487		
				1735	.12	.50		1532	13.840	.0518		
				1745	.06	.51		1548	13.894	.0559		
				1805	.00	.51		1608	15.046	.0613		
				1815	.18	.54		1628	17.306	.0673		
				1835	.06	.56		1700	26.041	.0801		
				1845	.06	.57		1732	36.837	.0987		
				1900	.04	.58		1740	39.196	.1043		
				2105	.00	.58		1748	39.682	.1102		
				2220	.01	.59		1800	39.574	.1190		
				RG	R-1	.60		1812	37.584	.1276		
				2 RG	AVG 2/	.60		1848	29.589	.1499		
								1908	25.510	.1601		

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.001106. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ RUNOFF PRIOR TO 0846. 2/ THIESSEN WEIGHTED FOR RG R-1 AND R-2.

1963			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA				BRUSH CREEK W-I		13.08	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)				
Event of March 1 and 2, 1963 - Continued														
							3 - 1	1936	21.854	.1724				
								2000	18.072	.1813				
								2012	16.163	.1851				
								2032	14.101	.1907				
								2052	13.399	.1958				
								2112	11.517	.2004				
								2146	9.275	.2069				
								2208	8.257	.2105				
								2240	7.330	.2151				
								2328	6.474	.2213				
							3 - 2	2400	6.033	.2250				
								0120	5.259	.2333				
								0300	4.907	.2427				
								0440	4.376	.2513				
								0720	<u>1/</u> 3.710	.2633				

NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 0.0011106. 1/ NORMAL BASE FLOW.

NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 0.001106. 1/ NORMAL BASE FLOW.



BLACKSBURG, VIRGINIA BRUSH CREEK WATERSHED W-I

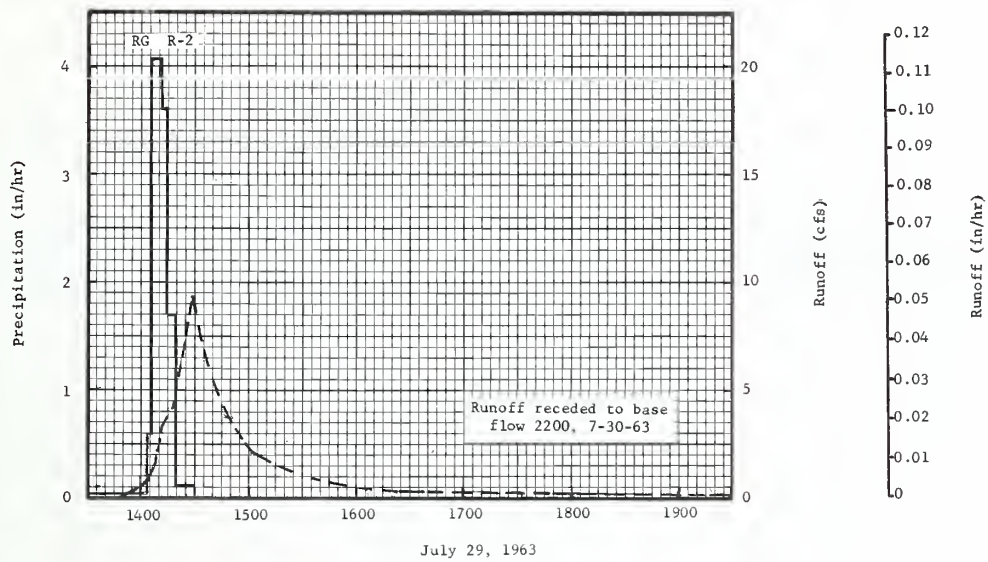
MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA POWELLS CREEK WATERSHED W-I AREA—182 ACRES								13.09		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P ₁ / Q	2.18 1.34	2.76 1.45	5.72 4.47	1.56 .34	2.36 .31	1.95 .24	4.46 .31	1.56 .19	2.68 .20	.40 .22	5.95 .76	1.80 .52	33.38 10.35			
STA AV ₂ / (58-63) Q	3.10 2.13	3.33 2.12	4.00 2.61	3.58 1.84	3.92 1.12	2.64 .39	3.54 .26	4.23 .39	2.68 .31	2.93 .65	3.17 .87	3.32 1.45	40.44 14.14			
MEAN P ₃ / 73 YR	3.50	3.37	3.79	3.43	3.89	3.78	4.47	4.38	3.46	2.76	2.67	3.27	42.77			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-12	.56	3-6	.75	3-6	.96	3-6	1.28	3-6	1.57	3-5	1.67	3-5	1.78	3-5	3.41
MAXIMUMS FOR PERIOD OF RECORD																
19 58 TO 19 63	5-31 1962	1.31	5-31 1962	.78	3-6 1963	.96	3-6 1963	1.28	1-6 1962	1.64	12-28 1958	1.95	12-28 1958	2.25	3-5 1963	3.41
Notes: Watershed condition: Pasture, native grass mixture, usually good to excellent cover, 61%; row crop, mostly corn and tobacco, 5%; small grain, 3%; alfalfa and other hay crops, 5%; farm woods, predominantly hardwood, 16%; idle, 9%; roads, 1%. (Total cultivated, 13%) 1/ Precipitation Thiessen weighted from R-1 and R-2. 2/ Determined from continuous records from January 1958 through 1963. 3/ Mean P based on 73-yr (1891-1963) U. S. Weather Bureau record period at Danville, Va. Missing monthly totals for July and Aug. 1946 were estimated from nearby Weather Bureau records at Danville, Va., (Airport)																
1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA POWELLS CREEK WATERSHED W-I							13.09			
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.10S	.62	.00	.00	.00	.59	.00	.00	.00	.89	.00				
2	.00	.27	.00	.00	.00	.11	.39	.00	.00	.00	.02	.00				
3	.00	.12	.00	.00	.00	.12	.00	.00	.00	.00	.00	.08				
4	.00	.00	.00	.00	.00	.00	.00	.09	.22	.00	.00	.00				
5	.00	.00	.59	.00	.00	.00	.00	.00	.11	.00	.29	.00				
6	.00	.00	1.45	.38	.07	.00	.00	.00	.06	.00	2.98	.00				
7	.00	.00	.00	.04	.00	.02	.00	.00	.00	.00	.10	.00				
8	.00	.00	.00	.00	.00	.00	.98	.01	.00	.00	.00	.16				
9	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	.01M	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00				
11	.00	.51M	.22	.00	.00	.00	.00	.00	.00	.00	.00	.16				
12	.53L	.61M	2.20	.00	.00	.00	.01	.00	.00	.00	.00	.19				
13	.26	.00	.00	.00	.00	.00	.01	.00	.19	.00	.00	.11				
14	.00	.00	.00	.00	.00	.00	.38	.00	.30	.00	.00	.26				
15	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00				
16	.00	.00	.17	.00	.04	.39	.00	.00	.00	.00	.00	.00				
17	.00	.00	.28	.03	.67	.19	.05	.00	.00	.00	.00	.00				
18	.35	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00				
19	.55	.75S	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
20	.40	.00	.00	.00	.23	.46	.00	.16	.00	.00	.00	.00				
21	.00	.00	.00	.00	.08	.60	.00	.03	.00	.00	.00	.00				
22	.00	.00	.00	.07	.08	.00	.00	.00	.00	.00	.00	.00				
23	.00	.00	.00	.00	.15	.00	1.08	.00	.00	.05	.28	.61				
24	.00	.22S	.00	.00	.00	.00	.03	.00	.00	.00	.00	.06				
25	.00	.00	.00	.00	.00	.00	.05	.35	.00	.00	.00	.00				
26	.01	.17S	.19	.00	.07	.00	.00	.62	.00	.00	.00	.00				
27	.03	T	.00	.00	.02	.06	.00	.00	.00	.00	.00	.00				
28	.00	.00	.00	.00	.00	.00	.10	.00	1.29	.05	.00	.00				
29	.00	-----	.00	1.03	.81	.00	.78	.08	.51	.30	1.39	.00				
30	.05M	-----	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00				
31	.00	-----	.00	-----	.00	-----	.01	.00	-----	.00	-----	.17M				
TOTAL	2.18	2.76	5.72	1.56	2.36	1.95	4.46	1.56	2.68	.40	5.95	1.80				
STA AV	3.10	3.33	4.00	3.58	3.92	2.64	3.54	4.23	2.68	2.93	3.17	3.32				
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM GAGES R-1 AND R-2. FOR DRAINAGE PATTERN OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.9-8.																

1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA POWELLS CREEK WATERSHED W-I 13.09						
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.16	.17	2.17	.10	.08	.07	.11	.05	.05	.05	.13	.13
2	.15	.32	.85	.10	.08	.06	.08	.05	.05	.05	.12	.12
3	.15	.78	.41	.09	.06	.08	.06	.05	.05	.05	.08	.12
4	.16	.22	.37	.09	.06	.07	.05	.05	.05	.05	.06	.11
5	.16	.23	.91	.09	.06	.06	.06	.05	.06	.05	.07	.11
6	.16	.21	12.60	.14	.07	.06	.06	.05	.06	.05	2.05	.10
7	.16	.18	.51	.14	.07	.06	.06	.05	.05	.05	.38	.10
8	.16	.16	.31	.11	.06	.06	.26	.04	.05	.05	.11	.11
9	.16	.15	.25	.10	.06	.06	.06	.05	.04	.05	.09	.11
10	.14	.16	.23	.09	.06	.06	.05	.05	.04	.05	.08	.10
11	.15	.33	.30	.09	.06	.05	.05	.04	.04	.05	.08	.10
12	.62	2.62	10.60	.08	.06	.05	.05	.04	.04	.05	.08	.23
13	.38	.46	.84	.08	.06	.05	.05	.04	.04	.05	.07	.13
14	.24	.29	.35	.08	.06	.05	.06	.04	.05	.05	.06	.32
15	.19	.21	.27	.08	.07	.05	.06	.04	.04	.05	.06	.15
16	.17	.18	.32	.07	.06	.06	.05	.04	.04	.05	.06	.11
17	.17	.18	.67	.08	.13	.06	.06	.05	.04	.05	.06	.10
18	.51	.17	.29	.08	.08	.06	.05	.04	.04	.06	.06	.10
19	.67	1.58	.23	.07	.07	.05	.05	.04	.04	.06	.06	.09
20	3.02	.42	.20	.06	.07	.08	.05	.05	.04	.06	.06	.10
21	.75	.28	.17	.06	.07	.15	.05	.04	.04	.06	.06	.10
22	.29	.25	.16	.07	.07	.07	.05	.04	.04	.06	.07	.10
23	.28	.24	.15	.06	.09	.06	.20	.04	.04	.06	.10	.10
24	.17	.22	.14	.06	.08	.06	.07	.04	.04	.06	.09	.10
25	.15	.21	.13	.07	.07	.05	.06	.04	.04	.06	.08	.15
26	.14	.20	.16	.07	.06	.05	.06	.08	.04	.06	.08	.29
27	.14	.17	.15	.07	.06	.06	.05	.05	.04	.06	.08	.19
28	.15	.50	.13	.06	.06	.06	.05	.05	.08	.06	.08	.14
29	.17	-----	.12	.19	.22	.05	.33	.05	.21	.08	1.14	.13
30	.20	-----	.11	.12	.09	.05	.06	.06	.05	.06	.21	.10
31	.19	-----	.10	-----	.08	-----	.05	.05	-----	.06	-----	.10
MEAN	.33	.40	1.10	.09	.08	.06	.08	.05	.05	.06	.19	.13
INCHES	1.34	1.45	4.47	.34	.31	.24	.31	.19	.20	.22	.76	.52

NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.130779.

1963 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				POWELLS CREEK WATERSHED W-I 13.09			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of July 29, 1963										
7-29	RG R-2 1/ .01	2/ .0064	7-29	RG	R-2		7-29			
				1330	.00	.00		1350	.055	.0000
				1404	.02	.01		1404	.675	.0003
				1407	.60	.04		1409	1.886	.0009
				1411	4.05	.31		1412	3.333	.0016
Watershed conditions: 61% permanent pasture, good cover of grass and clover mixtures; 16% farm woods predominantly hard wood, good cover; 5% corn, 5 to 6 feet high and tobacco 2 to 3 feet high; 3% small grain stubble fair cover; 5% hay, mostly alfalfa 3 to 5 in. high, fair cover; 9% idle land, good cover; 1% roads.				1414	3.60	.49	1419	4.180	.0040	
				1419	1.68	.63	1424	6.662	.0064	
				1430	.11	.65	1428	9.312	.0093	
							1444	4.614	.0194	
							1500	2.176	.0244	
							1520	1.224	.0275	
							1546	.692	.0297	
							1612	.411	.0310	
							1640	.272	.0319	
							2 RG	AVG 3/	.78	1732	.169	.0329
							1820	.125	.0336	
							1920	.110	.0342	
							2200	4/ .079	.0356	

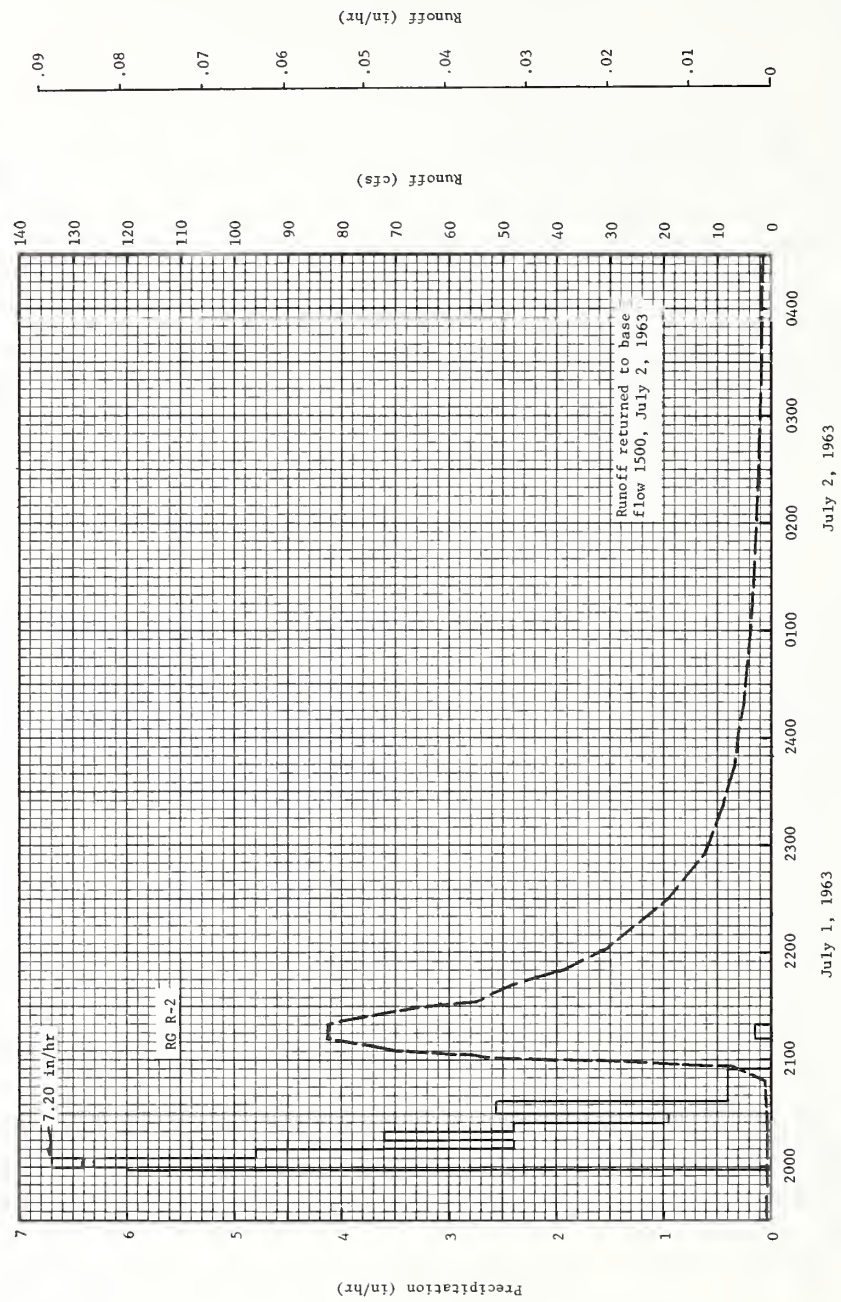
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0054491. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ PRIOR TO 0040. 2/ PRIOR TO 1350. 3/ THIESSEN WEIGHTED FOR RG R-1 AND R-2. 4/ RUNOFF RECEDED TO BASE FLOW 2200, 7-30-63.



BLACKSBURG, VIRGINIA POWELLS CREEK WATERSHED W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA						LITTLE WINNS CREEK W-I				13.10			
						AREA--1,471 ACRES (2.30 SQ. MILES)													
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL					
1963	P ₁ / Q	2.00 .88	2.89 .93	5.49 2.74	1.36 .62	2.68 .56	1.99 .38	2.28 .38	1.73 .21	2.59 .20	.40 .26	6.39 .67	1.91 .52	31.71 8.35					
STA AVG ^{2/} (58-63) O		3.16	3.46	3.98	3.69	3.66	3.28	2.85	4.97	3.07	2.83	3.23	3.25	41.43					
		1.19	1.34	1.63	1.34	1.09	.77	.42	.68	.46	.75	.69	1.00	11.36					
MEAN P ₃ / 33 YR		3.36	3.21	3.92	3.70	3.76	4.22	4.68	4.26	3.66	2.69	3.22	3.19	43.87					
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																			
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS				
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME			
1963	3-6	.20	3-6	.18	3-6	.32	3-6	.58	3-6	.75	3-6	.85	3-5	.93	3-6	1.82			
MAXIMUMS FOR PERIOD OF RECORD																			
19 58 TO 19 63	10-10 1959	1.12	10-10 1959	.71	10-10 1959	1.03	10-10 1959	1.41	10-10 1959	1.51	10-10 1959	1.58	10-10 1959	1.62	10-10 1959	1.91			
Notes: Watershed conditions: Pasture, native grass mixture, usually fair cover, 8%; row crops mostly corn and tobacco, 12%; alfalfa and other hay crops, 3%; farm woods, mixture of hardwoods and conifers, with pine predominating, 58%; idle land, 19% conditions are consistent from year to year. (Total cultivated, 15%) 1/ Precipitation Thiessen weighted R-1, R-2, and R-3. 2/ Determined from continuous records from January 1958 through 1963. 3/ Mean P based on 33-yr (1931-63) U. S. Weather Bureau record period at Halifax (1 mile N.), Va.																			
1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA											LITTLE WINNS CREEK WATERSHED W-I		13.10
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC							
1	.00	.14S	.53	.00	.00	.00	1.17	.11	.00	.00	.87	.00							
2	.00	.21	.00	.00	.00	.11	.04	.00	.00	.00	.04	.00							
3	.00	.18	.00	.00	.00	.21	.00	.00	.00	.00	.00	.05							
4	.00	.00	.00	.00	.00	.00	.00	.23	.09	.00	.00	.00							
5	.00	.00	.54	.00	.00	.00	T	.00	.16	.00	.14	.00							
6	.02	.00	1.70	.35	1.06	.00	.00	.00	.09	.00	3.31	.00							
7	.00	.00	.00	.07	.00	.04	.00	.00	.00	.00	.08	.00							
8	.00	.00	.01	.00	.00	.00	.18	.00	.00	.00	.00	.14							
9	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00							
10	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.01	.00							
11	.00	.42M	.22	.00	.00	.00	.00	.00	.00	.00	.00	.09							
12	.36	.67M	1.77	.00	.00	.00	.00	.00	.00	.00	.00	.21							
13	.22	.00	.00	.00	.00	.00	.00	.00	.24	.00	.00	.12							
14	.00	.00	.00	.00	.00	.00	.27	.00	.36	.00	.00	.30							
15	.00	.00	.00	.00	.08	.00	.00	.00	.02	.00	.00	.00							
16	.00	.00	.16	.00	.06	.37	.00	.00	.00	.00	.00	.00							
17	.00	.00	.39	.06	.58	.20	.04	.00	.00	.00	.00	.00							
18	.37	.00	.00	.00	.00	.00	.00	.19	.00	.00	.00	.00							
19	.41	.68S	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00							
20	.48	.00	.00	.00	.13	.47	.00	.14	.00	.00	.00	.00							
21	T	.00	.00	.00	.03	.59	.00	.00	.02	.00	.00	.00							
22	.00	.00	.00	.01	.16	.00	.07	.00	.00	.00	.00	.00							
23	.02M	.00	.00	.00	.13	.00	.14	.00	.00	.04	.32	.69							
24	.00	.24S	.00	.00	.00	.00	.03	.06	.00	.00	.00	.11							
25	.00	.00	.00	.00	.00	.00	.07	.34	.00	.00	.00	.00							
26	.01L	.35S	.17	.00	.03	.00	.00	.47	.00	.00	.00	.00							
27	.03	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00							
28	.00	.00	.00	.00	T	.00	.12	.00	1.18	.05	.00	.00							
29	.00	-----	.00	.85	.38	.00	.13	.05	.43	.31	1.62	.00							
30	.08M	-----	.00	.01	.01	.00	.00	T	.00	.00	.00	.00							
31	.00	-----	.00	-----	.00	-----	.02	.00	-----	.00	-----	.20							
TOTAL	2.00	2.89	5.49	1.36	2.68	1.99	2.28	1.73	2.59	.40	6.39	1.91							
STA AV	3.16	3.46	3.98	3.69	3.66	3.28	2.85	4.97	3.07	2.83	3.23	3.25							
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM GAGES R-1, R-2 AND R-3. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB 994, P. 13.10-8.																			

1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA		LITTLE WINNS CREEK W-I				13.10	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	1.68	1.32	6.49	1.41	1.11	.92	4.32	.57	.37	.41	.55	1.25	
2	1.49	1.38	4.55	1.41	1.07	1.08	1.36	.51	.36	.42	.77	1.07	
3	1.40	2.02	2.71	1.41	1.07	.97	.74	.46	.35	.46	.50	1.04	
4	1.34	1.51	2.24	1.36	1.07	.91	.65	.48	.37	.46	.50	.96	
5	1.33	1.49	2.85	1.30	1.07	.89	.65	.52	.43	.47	.59	.90	
6	1.31	1.45	52.65	1.50	2.33	.82	.65	.48	.51	.47	9.47	.86	
7	1.29	1.42	4.87	1.52	1.69	.80	.65	.46	.00	.44	3.96	.84	
8	1.26	1.31	2.96	1.41	1.18	.79	.70	.44	.87	.43	1.08	.91	
9	1.22	1.28	2.38	1.37	1.10	.79	.64	.43	.39	.44	.90	.87	
10	1.18	1.31	2.02	1.31	1.05	.76	.60	.42	.35	.45	.83	.82	
11	1.17	1.40	1.97	1.27	.99	.75	.59	.40	.33	.46	.77	.83	
12	1.57	7.75	26.91	1.27	1.03	.70	.61	.38	.32	.46	.76	1.09	
13	1.46	3.53	7.62	1.27	1.09	.69	.61	.35	.33	.46	.76	.93	
14	1.35	2.32	3.60	1.25	1.09	.67	.76	.35	.57	.47	.72	1.26	
15	1.26	1.81	2.69	1.25	1.05	.64	.65	.34	.45	.47	.71	1.11	
16	1.22	1.60	2.51	1.25	1.02	.88	.60	.32	.43	.47	.71	1.09	
17	1.21	1.60	4.88	1.28	1.34	.88	.63	.32	.42	.48	.71	1.09	
18	1.78	1.54	3.08	1.27	1.13	.74	.58	.34	.41	.49	.71	1.09	
19	1.94	3.72	2.42	1.25	1.05	.71	.55	.42	.39	.52	.71	1.09	
20	7.70	2.82	2.16	1.20	.99	.83	.53	.47	.37	.52	.71	1.09	
21	4.78	2.21	1.88	1.16	1.09	1.23	.53	.42	.35	.51	.71	1.09	
22	2.40	1.84	1.74	1.18	1.09	.78	.51	.40	.32	.56	.71	1.09	
23	2.01	1.69	1.69	1.15	1.09	.70	.53	.36	.32	.50	.90	1.09	
24	1.64	1.81	1.63	1.12	.94	.65	.60	.33	.33	.50	.86	1.09	
25	1.49	1.69	1.57	1.09	.92	.67	.55	.34	.34	.58	.78	1.09	
26	1.46	1.67	1.68	1.09	.97	.67	.51	.87	.35	.60	.78	1.18	
27	1.46	1.66	1.62	1.09	.98	.67	.56	.45	.39	.60	.76	1.13	
28	1.34	2.10	1.49	1.09	.98	.67	.61	.45	.39	.60	.76	1.09	
29	1.28		1.46	1.45	1.23	.66	.64	.43	1.17	.78	0.06	1.09	
30	1.28		1.41	1.43	.95	.65	.59	.41	.41	.60	2.23	1.09	
31	1.28		1.41		.92		.57	.39		.60		1.09	
MEAN	1.76	2.04	5.46	1.28	1.12	.79	.75	.43	.42	.51	1.36	1.04	
INCHES	.88	.93	2.74	.62	.56	.38	.38	.21	.20	.26	.67	.52	
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.016181.													
1963 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA		LITTLE WINNS CREEK W-I				13.10	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)			
Event of July 1 and 2, 1963													
7 -1	.00	2/.0088	7 -1	RG	R-2		7 -1						
				1958	.00	.00		2040	.5785	.0000			
				2000	5.99	.20		2034	.7416	.0001			
				2005	7.20	.80		2048	1.0531	.0002			
				2010	4.80	1.20		2056	6.9120	.0006			
				2015	2.40	1.40		2059	29.2497	.0012			
				2120	3.60	1.70		2101	53.3674	.0021			
				2025	2.40	1.90		2103	56.7196	.0034			
				2030	.96	1.98		2105	69.5200	.0048			
				2037	2.57	2.28		2108	74.6818	.0072			
				2055	.40	2.40		2112	82.4985	.0108			
				2112	.00	2.40		2120	82.6172	.0182			
				2120	.15	2.42		2124	76.0909	.0217			
				RG	R-3			2130	63.7799	.0265			
				7 -1				7 -1	2000	.00	.00	7 -2	2132	55.3550	.0278
2003	.20	.01	2140				48.3540		.0336				
2005	4.50	.16	2150				38.5646		.0375				
2010	4.20	.51	2202				30.9851		.0422				
2017	3.77	.95	2230				19.3268		.0501				
2030	2.12	1.41	2256				12.3407		.0548				
2120	.06	1.46	2324				8.7660		.0581				
2130	.30	1.51	2344				6.7933		.0598				
2212	.04	1.54	2400				6.1852		.0610				
RG	R-1	.19	0020				5.1321		.0623				
3 RG	AVG 1/	1.17	0100				3.7378		.0643				
			0128				3.1445		.0653				
			0220				2.3880		.0670				
			0320				1.9431		.0684				
			0436				1.5574		.0699				
			0540	1.3943	.0710								
			0700	1.2311	.0721								
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0006742. FOR 30-DAY ANTECEDENT P & Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ THIESSEN WEIGHTED FOR RG R-1, R-2 & R-3. 2/ RUNOFF PRIOR TO 2020. 3/ RETURNED TO BASE FLOW.									0900	1.0828	.0737		
									1200	.9493	.0758		
									1500	3/.6158	.0775		



BLACKSBURG, VIRGINIA LITTLE WINNS CREEK WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA ROCKY RUN BRANCH WATERSHED W-1 13.11 AREA—555 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/ Q	2.22 1.01	3.11 1.14	4.23 2.68	1.51 .67	1.09 .44	2.14 .25	3.63 .25	1.62 .09	2.84 .08	.28 .07	5.43 .29	2.66 .46	30.76 7.43			
STA AV2/ P (58-63) Q	2.98 1.15	3.63 1.61	3.65 1.72	2.88 1.22	4.11 1.27	4.19 .90	4.51 .66	3.18 .35	3.07 .31	2.86 .45	3.10 .70	3.15 .94	41.31 11.28			
MEAN P3/ 33 YR	3.23	3.34	3.53	3.37	4.02	4.20	6.03	5.01	3.94	2.39	2.93	3.09	45.08			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-6	.17	3-6	.16	3-6	.29	3-6	.61	3-6	.88	3-6	1.05	3-6	1.20	3-5	1.61
MAXIMUMS FOR PERIOD OF RECORD																
19 58 TO 19 63	6-7 1961	.22	6-7 1961	.19	5-8 1958	.34	5-6 1958	.71	5-6 1958	.98	5-6 1958	1.45	5-5 1958	2.09	4-30 1958	2.86
Notes: Watershed conditions: Permanent pasture, usually a good cover of native grass and clover mixture, 10%; alfalfa and other hay crops, 10%; corn, 1%; tobacco, 2%; other row crops, 9%; farm woods, mixture of hardwoods and conifers, 54%; idle land, usually a good cover of tall weeds, vines and short growing plants, 12%; roads, 2%. (Total cultivated, 22%) 1/ Precipitation Thiessen weighted from R-1 and R-2. 2/ Determined from continuous records from April 1958 through 1963. 3/ Mean P based on 33-yr (1931-63) U. S. Weather Bureau record period at Emporia (1 mi. WNW), Va.																
1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA ROCKY RUN BRANCH WATERSHED W-1 13.11										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.02S	.07	.00	.00	.00	.06	.40	.00	.00	.59	.00				
2	.00	.22	.00	.00	.00	.74	2.25	.00	.00	.00	.09	.00				
3	.00	.28	.00	.00	.00	.32	.01	.00	.00	.00	.00	.13				
4	.00	.00	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00				
5	.00	.00	.99	.00	.00	.00	.00	.00	.52	.00	.03	.00				
6	.00	.00	1.54	.09	.00	.00	.00	.00	.03	.00	2.44	.00				
7	.00	.00	.00	.12	.30	.16	.00	.00	.00	.00	.30	.00				
8	.00	.00	.00	.00	.00	.00	.01	.00	.00	.04	.00	.82				
9	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	.00	.00	.00	.00	.04	.00	.03	.00	.00	.00	.00				
11	.00	.50M	.09	.00	.00	.00	.00	.31	.00	.00	.00	.04				
12	.17	.64M	.52	.00	.00	.00	.00	.00	.00	.00	.00	.20				
13	.48	.00	.00	.00	.00	.00	.00	.04	.06	.00	.00	.15				
14	.00	.00	.00	.00	.00	.00	.11	.00	.48	.00	.00	.49				
15	.00	.00	.00	.00	.00	.00	.00	.00	.40	.00	.00	.00				
16	.00	.00	.54	.00	.12	.14	.00	.00	T	.00	.00	.00				
17	.00	.00	.31	.12	.23	.00	.02	.00	.00	.00	.00	.00				
18	.46	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00				
19	.48	.82S	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00				
20	.41	.00	.00	.00	.20	.08	.00	.11	.00	.00	.00	.00				
21	.01	.00	.00	.00	.06	.66	.00	.26	.00	.00	.00	.00				
22	.00	.00	.00	.69	.06	.00	.00	.00	.00	.00	.00	.00				
23	.08	.00	.00	.02	.12	.00	.22	.00	.00	.00	.50	.69				
24	.00	.36	.00	.00	.00	.00	.02	.00	.00	.00	.00	.04				
25	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00				
26	.05L	.27S	.17	.00	.00	.00	.00	.35	.00	.00	.00	.00				
27	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
28	.00	.00	.00	.00	.00	.00	.29	.00	.54	.00	.00	.00				
29	.00	-----	.00	.31	.00	.00	.00	.00	.65	.24	1.46	.00				
30	.02M	-----	.00	.13	.00	.00	.00	.00	.00	.00	.02	.00				
31	.00	-----	.00	-----	.00	-----	.64	.00	-----	.00	-----	.10M				
TOTAL	2.22	3.11	4.23	1.51	1.09	2.14	3.63	1.62	2.84	.28	5.43	2.66				
STA AV	2.98	3.63	3.65	2.88	4.11	4.19	4.51	3.18	3.07	2.86	3.10	3.15				
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM GAGES R-1 AND R-2. FOR DRAINAGE PATTERN MAP OF THE WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.11-8.																

1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA							ROCKY RUN BRANCH WATERSHED W-I 13.11	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.78	.55	1.23	.65	.44	.25	.11	.16	.02	.04	.10	.31		
2	.67	.57	1.21	.63	.41	.30	2.25	.11	.02	.04	.14	.25		
3	.61	1.01	.98	.60	.40	.52	.34	.09	.02	.05	.09	.25		
4	.57	.73	.91	.60	.36	.28	.20	.08	.04	.05	.08	.23		
5	.55	.71	1.56	.56	.36	.25	.17	.07	.13	.05	.08	.20		
6	.55	.67	24.56	.57	.36	.26	.16	.06	.08	.05	.96	.20		
7	.55	.63	3.34	.62	.42	.24	.15	.06	.06	.06	.67	.20		
8	.51	.57	1.87	.58	.35	.22	.14	.06	.06	.04	.22	.50		
9	.50	.55	1.44	.55	.34	.19	.14	.06	.05	.04	.16	.55		
10	.50	.55	1.24	.55	.34	.19	.12	.06	.04	.04	.15	.33		
11	.48	.58	1.11	.55	.34	.19	.12	.07	.04	.04	.15	.29		
12	.50	2.98	1.91	.55	.33	.16	.12	.07	.03	.04	.13	.35		
13	.66	1.54	1.63	.55	.33	.15	.12	.06	.03	.05	.13	.31		
14	.69	1.05	1.24	.53	.33	.15	.15	.04	.08	.04	.13	.82		
15	.57	.86	1.06	.50	.31	.13	.13	.04	.09	.04	.13	.59		
16	.51	.76	1.59	.50	.31	.18	.10	.04	.08	.04	.13	.40		
17	.50	.71	2.57	.50	.40	.18	.07	.04	.07	.04	.13	.35		
18	.82	.71	1.66	.49	.37	.18	.06	.04	.07	.04	.13	.32		
19	.90	1.93	1.31	.47	.32	.15	.08	.06	.06	.04	.14	.29		
20	2.67	1.48	1.18	.44	.36	.16	.08	.07	.06	.04	.14	.27		
21	2.28	1.07	1.02	.41	.31	.30	.08	.09	.06	.04	.13	.25		
22	1.15	.88	.92	.47	.29	.18	.08	.08	.04	.04	.13	.25		
23	.97	.80	.85	.69	.31	.17	.12	.06	.04	.06	.18	.50		
24	.79	1.06	.82	.45	.30	.16	.11	.04	.04	.07	.18	.51		
25	.69	1.00	.79	.45	.30	.15	.08	.04	.04	.07	.15	.41		
26	.68	.89	.83	.44	.30	.15	.07	.08	.04	.07	.15	.35		
27	.71	.82	.82	.42	.27	.13	.07	.06	.04	.07	.15	.33		
28	.60	1.00	.73	.40	.26	.13	.11	.05	.06	.07	.15	.31		
29	.59	-----	.68	.45	.26	.11	.10	.04	.20	.10	.80	.30		
30	.57	-----	.65	.54	.26	.11	.08	.04	.06	.09	.69	.28		
31	.55	-----	.65	-----	.26	-----	.17	.04	-----	.08	-----	.27		
MEAN	.76	.95	2.01	.52	.33	.20	.19	.06	.06	.05	.22	.35		
INCHES	1.01	1.14	2.68	.67	.44	.25	.25	.09	.08	.07	.29	.46		

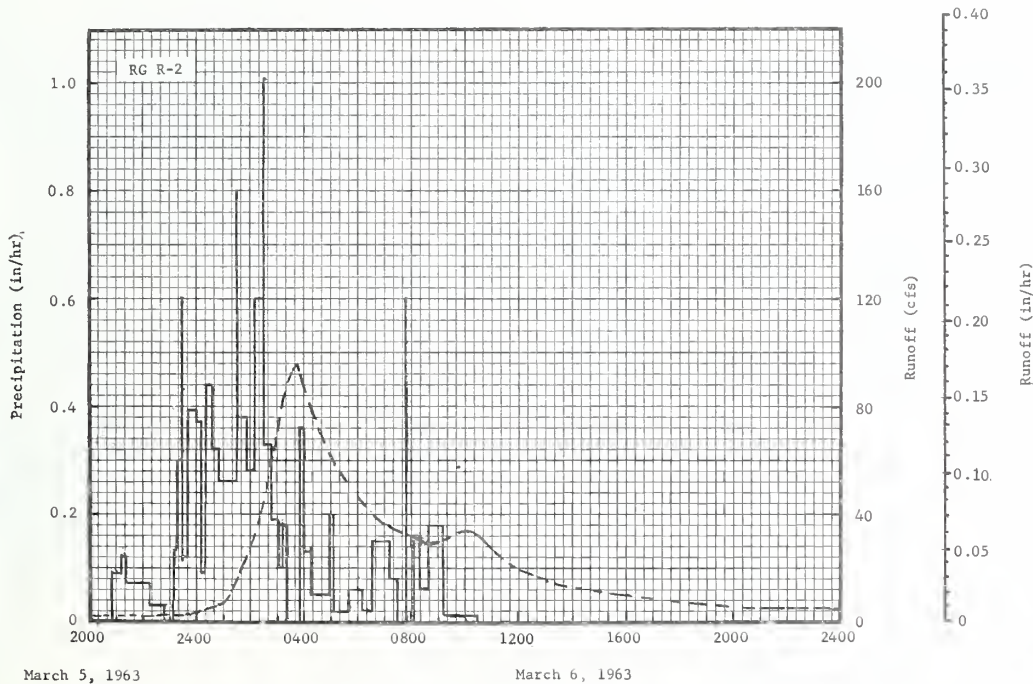
NOTES: 1/ CONVERT CFS TO IN/DAY, MULTIPLY BY 0.042886.

1963 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				ROCKY RUN BRANCH WATERSHED W-I 13.11			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of March 5 and 6, 1963										
3 -5	RG R-2 1/ .48	2/.0589	3 -5	RG	R-2		3 -5			
				2054	.00	.00		2200	1.975	.0000
				2115	.09	.03		2308	2.104	.0041
				2125	.12	.05		2328	2.233	.0054
				2215	.07	.11		2348	2.496	.0068
				2250	.03	.13				
				2308	.00	.13		2400	2.944	.0078
				2317	.13	.15				
				2325	.30	.19		0056	6.973	.0161
				2328	.60	.22		0108	9.273	.0190
Watershed conditions: 54% farm										
woods, a mixture of dormant										
hardwoods and conifers good										
cover; 10% permanent pasture,										
mostly a fair cover of dormant										
native grasses and clover										
mixtures; 10% alfalfa and other										
hay crops mostly dormant, good										
cover; 10% corn and tobacco										
stubble, poor cover; 14% idle,										
good cover of dormant weeds										
and grass; 2% roads.										
			3 -6	2335	.43	.27		0230	44.798	.0784
				2340	.12	.28		0240	52.638	.0929
				2400	.39	.41		0252	61.352	.1133
								0300	71.414	.1291
				0013	.37	.49		0306	78.666	.1425
				0020	.09	.50		0312	81.632	.1568
				0035	.44	.61		0332	92.428	.2087
				0050	.32	.69		0342	95.170	.2366
				0130	.26	.86		0428	75.924	.3538
				0133	.80	.90		0440	70.602	.3800
				0155	.38	1.04		0512	58.044	.4413
				0212	.28	1.12		0600	47.809	.5170
				0230	.60	1.30		0632	41.160	.5593
				0234	1.05	1.37		0708	36.314	.6009
				0245	.33	1.43		0748	32.447	.6418
				0304	.19	1.49		0820	29.862	.6715
				0310	.10	1.50		0852	29.912	.7000
				0320	.18	1.53		0920	31.703	.7257
				0350	.00	1.53		0940	33.454	.7451
				0400	.36	1.59		1000	34.283	.7653

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0017869. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ OCCURRED BETWEEN 1145 AND 1555. 2/ PRIOR TO 2200.

1963			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA				ROCKY RUN BRANCH WATERSHED W-I				13.11	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of March 5 and 6, 1963 - Continued																
			3 -6	RG	R-2		3 -6									
				0418	.13	1.63		1020	33.354	.7854						
				0458	.05	1.66		1040	31.552	.8048						
				0507	.20	1.69		1144	21.607	.8554						
				0540	.02	1.70		1200	19.710	.8653						
				0610	.06	1.73		1400	13.688	.9249						
				0635	.02	1.74		1600	9.967	.9672						
				0712	.15	1.83		1708	8.585	.9860						
				0728	.08	1.85		1820	7.247	1.0030						
				0750	.00	1.85		2100	5.619	1.0337						
				0752	.60	1.87		2220	4.86							
				0805	.00	1.87		2400	2/ 4.6							
				0820	.16	1.91										
				0840	.06	1.93										
				0910	.18	2.02										
				1025	.01	2.03										
				RG	R-1	2.04										
				2 RG	AVG 1/	2.03										

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0017869. 1/ THIESSEN WEIGHTED FOR R-1 AND R-2. 2/ RETURNED TO BASE FLOW OF 2.22 CFS, 2400. 3-7-63.



March 5, 1963

March 6, 1963

BLACKSBURG, VIRGINIA ROCKY RUN BRANCH WATERSHED W-I

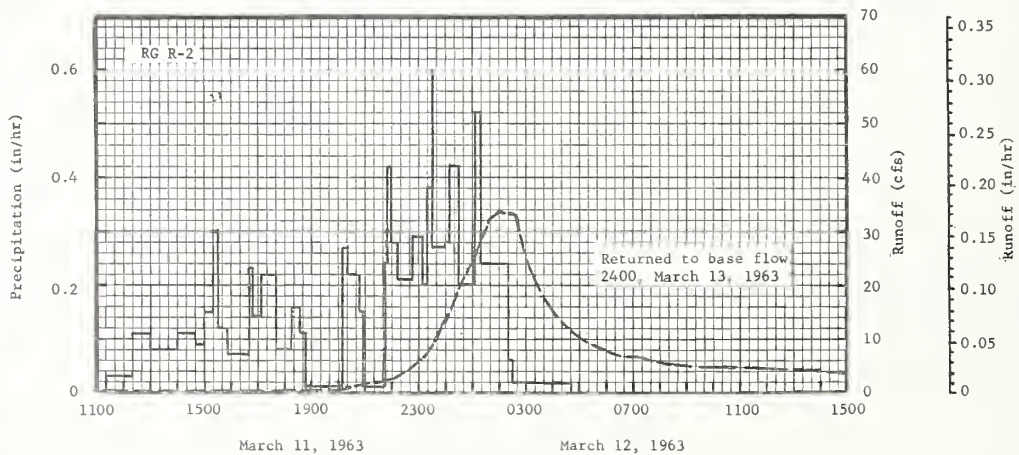
MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH WATERSHED W-I 13.12 AREA—192 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/ Q	1.79 1.49	1.74 .38	5.92 2.92	1.33 .01	1.07 .00	4.92 .14	1.96 .02	1.88 T	3.15 .01	.00 .00	6.28 .33	1.77 .07	31.81 5.37			
STA AV2/ P (58-63) Q	2.25 .94	3.09 1.67	3.89 2.15	3.01 1.26	3.02 .28	4.09 .53	3.26 .12	3.53 .16	3.23 .20	2.06 .07	3.02 .18	2.30 .30	36.75 7.86			
MEAN P3/ 57 YR	3.01	2.52	3.19	3.50	3.90	4.15	4.22	4.40	3.44	2.85	2.82	2.86	40.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-12	.17	3-12	.17	3-12	.32	3-11	.64	3-12	.84	3-11	1.05	3-11	1.24	3-11	2.05
MAXIMUMS FOR PERIOD OF RECORD																
19 58 TO 19 63	6-24 1958	.48	6-12 1958	.28	6-24 1958	.37	9-19 1960	.69	2-18 1950	.93	2-18 1960	1.17	2-18 1960	1.31	2-18 1961	2.76
Notes: Permanent pasture with a fair cover of native grass mixture, 30%; pasture, not permanent, mostly good cover of orchard grass and clover, 15%; mixed cover, farm woods, predominantly hardwood, 53%; farm road, gravel surface, 2%; 1/ Precipitation Thiessen weighted from R-1 and R-2. 2/ Determined from continuous records from May 1958 through 1963. 3/ Mean P based on 57-yr (1907-63) U. S. Weather Bureau record period at Culpeper, Va. Monthly records missing for Jan. through July 1907, Nov. 1949, Dec. 1950, and for Jan. through Apr. and July 1951.																
1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH WATERSHED W-I 13.12										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.09S	.21	.06	.00	.00	.04	.00	.00	.00	.97	.00				
2	.00	.28S	.01	.00	.00	.86	.00	.00	.00	.00	.02	.00				
3	.00	.01	.00	.00	.00	1.69	.00	.00	.00	.00	.00	.06				
4	.00	.00	.01	.00	.00	.04	.00	.12	.04	.00	.00	.00				
5	.00	.00	.17	.00	.00	.58	.00	.00	.91	.00	.07	.00				
6	.03	.00	.69	.00	.00	.00	.00	.00	.00	.00	2.02	.00				
7	.00	.00	.00	.00	.00	.43	.00	.04	.00	.00	.73	.00				
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.60				
9	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
11	.14	.21M	1.40S	.00	.00	.00	.00	.00	.00	.00	.00	.00				
12	.47	.34	.97S	.00	.00	.00	.05	.00	.00	.00	.00	.12				
13	.27	.09	.00	.00	.00	.00	.00	.11	.00	.00	.00	.01				
14	.00	.00	.00	.00	.00	.00	.47	.00	.00	.00	.00	.12				
15	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00				
16	.00	.00	.37	.00	.00	.00	.00	.00	.00	.00	.00	.00				
17	.00	.00	.28	.01	.42	.00	.00	.00	.00	.00	.00	.00				
18	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00				
19	.28	.63S	1.50	.00	.00	.00	.00	.72	.00	.00	.00	.00				
20	.04	.00	.00	.00	.20	.20	.05	.50	.00	.00	.00	.00				
21	.00	.00	.00	.00	.16	.01	.00	.14	.10	.00	.03	.00				
22	.00	.00	.00	.00	.00	.00	1.28	.02	.00	.00	.00	.00				
23	.09M	.00	.00	.18	.00	.00	.07	.00	.00	.00	.43	.84				
24	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02				
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
26	.23L	.00	.28	.00	.00	.00	.00	.00	.00	.00	.07	.00				
27	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
28	.00	.00	.00	.00	.00	.00	.00	.00	.38	.00	.03	.00				
29	.00	-----	.00	.40	.29	1.11	.00	.23	1.62	.00	1.91	.00				
30	.08	-----	.00	.56	.00	.00	.00	.00	.00	.00	.00	.00				
31	.07	-----	.03	-----	.00	-----	.00	.00	-----	.00	-----	.00				
TOTAL	1.79	1.74	5.92	1.33	1.07	4.92	1.96	1.88	3.15	.00	6.28	1.77				
STA AV	2.25	3.09	3.89	3.01	3.02	4.09	3.26	3.53	3.23	2.06	3.02	2.30				
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED AMOUNTS FROM GAGES R-1 AND R-2. STA AV IS FOR PERIOD MAY 1958 THROUGH 1963. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.12-7.																

1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH WATERSHED W-I 13.12						
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC
1	.05	.02	.04	.02	.00	.00	.00	.00	.00	.00	.00	.04
2	.04	.23	.04	.01	.00	T	.00	.00	.00	.00	.00	.02
3	.03	.21	.03	.01	.00	.67	.00	.00	.00	.00	.00	.01
4	.03	.06	.07	T	.00	.07	.00	.00	.00	.00	.00	.01
5	.03	.05	.17	T	.00	.13	.00	.00	.00	.00	.00	T
6	.03	.04	2.24	T	.00	.07	.00	.00	.00	.00	.18	T
7	.04	.05	.52	T	.00	.04	.00	.00	.00	.00	.39	T
8	.04	.03	.27	T	.00	.02	.00	.00	.00	.00	T	.23
9	.09	.02	.18	T	.00	.01	.00	.00	.00	.00	.00	.10
10	.38	.02	.13	.00	.00	T	.00	.00	.00	.00	.00	.03
11	3.39	.05	.80	.00	.00	T	.00	.00	.00	.00	.00	.03
12	3.74	.46	8.15	.00	.00	.00	.00	.30	.00	.00	.00	.03
13	1.71	.24	1.29	.00	.00	.00	.00	.00	.00	.00	.00	.03
14	.58	.13	.51	.00	.00	.00	.00	.00	.00	.00	.00	.02
15	.28	.07	.26	.00	.00	.00	.00	.00	.00	.00	.00	.01
16	.17	.06	.37	.00	.00	.00	.00	.00	.00	.00	.00	T
17	.14	.04	.96	.00	.00	.00	.00	.00	.00	.00	.00	T
18	.12	.03	.34	.00	.00	.00	.00	.00	.00	.00	.00	T
19	.15	.41	4.38	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.41	.37	1.43	.00	.00	.00	.00	.03	.00	.00	.00	.00
21	.15	.14	.50	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.07	.10	.23	.00	.00	.00	.16	.00	.00	.00	.00	.00
23	.10	.06	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.05	.04	.11	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.05	.04	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.02	.04	.10	.00	.00	.00	.00	.00	.00	.00	.00	T
27	.03	.03	.09	.00	.00	.00	.00	.00	.00	.00	.00	T
28	.02	.03	.05	.00	.00	.00	.00	.00	.00	.00	.00	T
29	.02	-----	.03	.00	.00	.08	.00	.00	.07	.00	1.94	.00
30	.02	-----	.03	.02	.00	.00	.00	.00	.00	.00	.15	.00
31	.03	-----	.02	-----	.00	-----	.00	.00	-----	.00	-----	.00
MEAN	.39	.11	.76	T	.00	.04	.01	T	T	.00	.09	.02
INCHES	1.49	.38	2.92	.01	.00	.14	.02	T	.01	.00	.33	.07
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.123967.												

1963 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH WATERSHED W-I 13.12						
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF					
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)		
3-11	RG R-2 .00	1/.0075	3-11	Event of March 11, 12, and 13, 1963			3-11					
				RG	R-2							
				1120	.00	.00		1520	.054	.0000		
				1220	.03	.03		1620	.132	.0005		
				1300	.11	.10		1730	.250	.0016		
				1400	.08	.18		1820	.422	.0031		
								1940	.650	.0068		
				1440	.11	.25		2000	.703	.0080		
				1500	.09	.28		2014	.709	.0088		
				1520	.15	.33		2112	1.603	.0146		
				1530	.30	.38		2140	2.110	.0191		
				1555	.12	.43						
				1640	.07	.48	2204	2.468	.0238			
				1648	.23	.51	2240	4.416	.0345			
				1705	.14	.55	2312	6.853	.0500			
				1740	.22	.68	2316	6.859	.0523			
				1817	.08	.73	2352	12.472	.0823			
				1836	.16	.78						
				1847	.11	.80	3-12					
				2009	.01	.82		0032	19.474	.1362		
				2020	.27	.87		0112	26.322	.2151		
				2047	.22	.97		0140	32.322	.2858		
				2055	.15	.99		0200	33.770	.3427		
2145	.01	1.00	0224	33.743	.4124							
2150	.24	1.02	0240	32.223	.4579							
2200	.42	1.09	0320	21.523	.5504							
2217	.28	1.17	0340	17.573	.5841							
2245	.21	1.27	0420	12.785	.6363							
2310	.29	1.39	0520	9.699	.6944							
2319	.20	1.42	0656	6.824	.7627							
2330	.38	1.49	0708	6.826	.7697							
2333	.60	1.52	0828	5.514	.8122							
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.005165. 1/ PRIOR TO 1520. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE.												

1963 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH WATERSHED W-I 13.12							
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of March 11, 12 and 13, 1963 - Continued										
3-11			RG	R-2			3-12			
				2400	.27	1.64		1020	4.925	.8626
3-12								1300	4.553	.9278
				0013	.28	1.70		1600	3.247	.9883
				0030	.42	1.82		2020	2.695	1.0548
				0045	.20	1.87		2136	2.567	1.0720
				0103	.20	1.93		2400	2.207	1.1016
				0118	.52	2.06	3-13			
				0210	.24	2.27		0308	1.777	1.1338
				0220	.24	2.31		0900	1.407	1.1821
				0230	.06	2.32		1412	1.162	1.2167
				0440	.02	2.37		1504	1.088	1.2217
								1516	1.086	1.2228
								1640	.945	1.2302
			RG	R-1		2.35		1800	.879	1.2364
			2 RG	AVG 1/		2.35		1848	.819	1.2400
								2008	.819	1.2456
								2400	2/ .759	1.2614

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.005165. 1/ THIESSEN WEIGHTED AVERAGE OF RG R-1 AND R-2
2/ RETURN TO BASE FLOW.

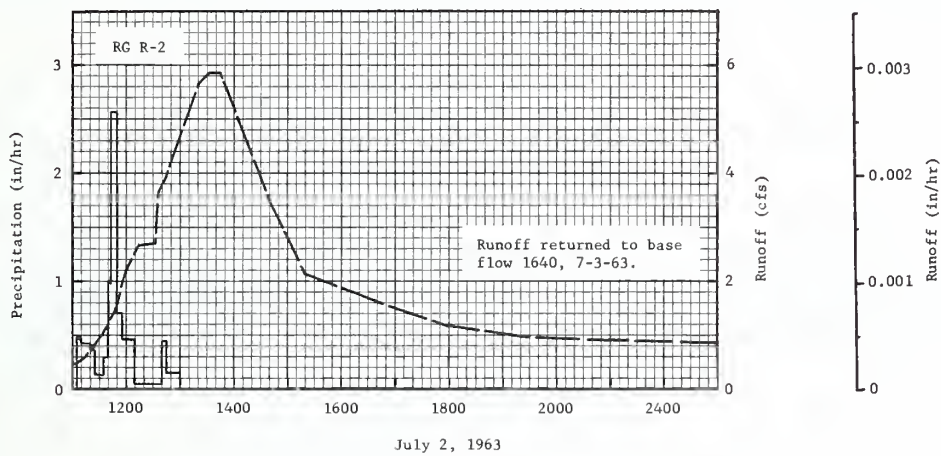


BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH WATERSHED W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA CHUB RUN WATERSHED W-I AREA—2,023 ACRES (3.16 SQ. MILES)								13.13		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC	ANNUAL			
1963 P 1 Q	1.36 1.04	1.71 .67	5.94 2.82	1.31 .76	1.05 .35	4.23 .41	1.82 .13	2.14 .07	3.15 .06	T .04	6.83 .38	1.65 .41	31.19 7.14			
STA AVG ^{2/} (59-63) ₀	1.72 .75	3.79 1.18	4.25 2.17	3.04 1.70	3.68 .95	4.72 .82	2.65 .28	2.85 .14	2.74 .12	2.07 .29	3.34 .50	2.31 .49	37.16 9.39			
MEAN P 3 23 YR	2.37	2.22	3.30	2.82	3.78	3.60	4.04	4.67	3.30	3.41	2.86	2.65	39.02			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-12	.06	3-12	.06	3-19	.10	3-19	.25	3-19	.36	3-19	.49	3-19	.65	3-12	1.41
MAXIMUMS FOR PERIOD OF RECORD																
1959 TO 1963	9-30 1959	.24	9-30 1959	.17	9-30 1959	.24	9-30 1959	.34	9-30 1959	.40	6-20 1962	.52	6-19 1962	.90	3-29 1960	1.58
Notes: Watershed conditions: Permanent pasture, a fair cover of native grasses, 30%; alfalfa and other hay crops, 6%; corn, 2%; mixed cover, farm woods, predominately hardwoods mixed with conifers, 57%; idle land, 4%; roads, 1%. (Total cultivated, 8%) 1/ Precipitation Thiessen weighted from R-1, R-2, and R-3. 2/ Determined from continuous records from September 1959 through 1963. 3/ Mean P based on 23-yr (1941-63) U. S. Weather Bureau record period at Luray (5 miles E), Va. Missing monthly totals for Jan. and Feb. 1941 were estimated from nearby Weather Bureau records at Riverton, Va.																

1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA CHUB RUN WATERSHED W-I						13.13
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.07S	.34	.00	.00	.00	.00	.00	.00	.00	.78	.00
2	.00	.25	.00	.00	.00	1.13	1.18	.00	.00	.00	.01	.00
3	.00	.00	.00	.00	.00	1.58	.00	.05	.03	.00	.00	.10
4	.00	.00	.04	.00	.00	.16	.00	.38	.00	.00	.00	.00
5	.00	.00	.08	.00	.00	.27	.00	.00	1.69	.00	.04	.00
6	.07	.00	.48	.00	.00	.04	.00	.00	.00	.00	1.73	.00
7	.00	.00	.00	.00	.00	.00	.00	.07	.00	.00	2.42	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.41
9	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.01	.00	T	.00	.00	.00	.00
11	.12	.21M	1.36M	.00	.00	.24	.00	.00	.00	.00	.00	T
12	.27	.55M	.81N	.00	.00	.00	.00	.00	.00	.00	.00	.16
13	.21	.02	.00	.00	.04	.00	.04	.12	.00	.00	.00	.00
14	.00	.00	.00	.00	.02	.03	.24	.00	.00	.00	.00	.08
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.26	.00	.03	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.28	.11	.47	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00
19	.15	.61S	1.92	.00	.00	.00	.00	.68	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.66	.15	.26	.00	.00	.00	.00
21	.00	.00	.09	.00	.03	.07	.00	.19	.16	.00	.03	.00
22	.00	.00	.00	.05	.00	.00	.02	.01	.00	.00	.00	.00
23	.24S	.00	.00	.41	.00	.00	.16	.00	.00	.00	.38	.90S
24	.00	.00	.00	.00	.00	.00	T	T	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.15S	T	.28	.00	.00	.00	.00	.00	.00	.00	.04	.00
27	.02	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.05	.00	.00	.20	.00	T	.00	.00
29	.00	-----	.00	.31	.39	.00	.00	.38	1.07	T	1.40	.00
30	.00	-----	.00	.31	.02	.04	.00	.00	.00	.00	.00	.00
31	.13	-----	.00	-----	.00	-----	.00	-----	-----	.00	-----	.00
TOTAL	1.36	1.71	5.94	1.31	1.05	4.23	1.82	2.14	3.15	T	6.83	1.65
STA AV	1.72	3.79	4.25	3.04	3.68	4.72	2.65	2.85	2.74	2.07	3.34	2.31
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED AMOUNTS FROM GAGES R-1, R-2 AND R-3. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.13-5.												

1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA			CHUB RUN WATERSHED W-I			13.13		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	2.92	1.63	3.06	3.53	1.51	.73	.43	.14	.06	.14	.27	1.94		
2	2.41	1.90	3.26	3.41	1.41	1.26	1.24	.10	.06	.14	.43	1.65		
3	1.49	2.06	2.69	3.22	1.35	4.41	.65	.12	.06	.12	.18	1.55		
4	1.39	1.63	2.69	2.96	1.24	3.10	.53	.22	.06	.12	.18	1.31		
5	1.82	1.65	3.08	2.79	1.24	2.53	.47	.12	.96	.12	.18	1.18		
6	1.29	1.71	5.77	2.73	1.22	2.33	.43	.10	.45	.12	1.22	1.04		
7	1.29	1.75	4.57	2.65	1.18	1.86	.41	.16	.22	.12	7.81	.94		
8	1.29	1.59	3.96	2.47	1.10	1.63	.41	.16	.16	.12	2.65	1.26		
9	1.35	1.45	3.49	2.47	1.02	1.43	.39	.10	.16	.12	1.51	1.29		
10	2.28	1.75	3.12	2.37	.98	1.24	.35	.18	.12	.12	1.18	1.06		
11	8.34	1.39	3.53	2.20	.92	1.29	.35	.18	.12	.12	.98	1.08		
12	8.75	2.16	35.37	2.16	.90	1.06	.37	.16	.12	.12	.86	1.16		
13	6.89	2.41	13.95	2.10	.78	.94	.31	.20	.12	.12	.75	1.06		
14	4.96	2.18	9.16	1.96	.96	.90	.43	.14	.10	.12	.69	.98		
15	3.96	2.08	7.10	1.90	.96	.84	.33	.14	.12	.12	.61	.96		
16	3.35	2.28	6.36	1.90	.92	.80	.27	.12	.12	.12	.57	.92		
17	3.04	1.86	7.36	1.90	1.10	.78	.24	.12	.10	.12	.53	.92		
18	2.88	2.14	5.34	2.00	1.04	.73	.22	.12	.10	.10	.53	.92		
19	2.71	2.16	35.55	1.86	.86	.65	.20	.18	.10	.10	.49	.92		
20	2.92	2.39	17.52	1.71	.80	1.10	.20	.49	.08	.10	.45	.92		
21	2.26	3.16	11.10	1.63	.82	.88	.24	.35	.12	.10	.45	.92		
22	1.90	3.08	8.42	1.63	.73	.73	.27	.31	.14	.10	.45	.92		
23	2.31	1.80	6.53	2.06	.73	.65	.35	.22	.12	.12	.61	.92		
24	2.04	1.75	5.81	1.61	.71	.59	.27	.22	.10	.12	.59	.92		
25	1.90	2.37	5.24	1.61	.67	.53	.20	.22	.10	.12	.49	.92		
26	1.90	2.04	5.06	1.49	.65	.49	.20	.18	.10	.12	.49	1.98		
27	1.90	2.26	4.81	1.39	.65	.45	.18	.18	.08	.12	.49	2.12		
28	1.84	1.94	4.32	1.37	.71	.43	.18	.18	.10	.12	.47	1.16		
29	2.98	-----	4.04	1.45	.86	.41	.20	.27	.82	.12	3.04	.88		
30	2.06	-----	3.81	1.71	.86	.43	.18	.24	.18	.12	2.92	.78		
31	1.63	-----	3.63	-----	.73	-----	.14	.06	-----	.12	-----	.65		
MEAN	2.84	2.02	7.73	2.14	.96	1.17	.34	.18	.18	.12	1.07	1.14		
INCHES	1.04	.67	2.82	.76	.35	.41	.13	.07	.06	.04	.38	.41		
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.011766.														
1963 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA			CHUB RUN WATERSHED W-I			13.13		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)				
7 -2	.00	1/.0023	7 -2	Event of July 2 and 3, 1963						7 -2				
				RG	R-2									
				1205	.00	.00	1000	.489	.0000					
				1210	.48	.04	1200	.469	.0005					
				1220	.42	.11	1214	.591	.0005					
				1225	.36	.14	1220	.815	.0006					
				1234	.13	.16	1234	1.040	.0007					
				1240	.30	.19	1240	1.448	.0008					
				1243	1.00	.24	1248	1.529	.0009					
				1250	2.57	.54	1300	2.223	.0010					
				1256	.70	.61	1312	2.652	.0013					
				1310	.47	.72	1331	2.733	.0017					
				1340	.04	.74	1336	3.650	.0018					
				1344	.45	.77	1344	3.957	.0021					
				1400	.15	.81	1420	5.630	.0035					
			1432	5.854	.0040									
7 -2			7 -2	RG	R-3		7 -3	1444	5.834	.0046				
				1204	.00	.00		1540	3.508	.0068				
				1210	2.60	.26		1620	2.142	.0082				
				1215	.60	.31		1740	1.611	.0091				
				1220	1.80	.46		1900	1.183	.0100				
				1223	2.00	.56		2020	.979	.0107				
				1231	1.50	.76		2200	.917	.0115				
				1236	2.40	.96		2400	.836	.0124				
				1240	1.95	1.09								
				1248	.90	1.21		1100	.693	.0165				
								1440	.551	.0177				
				1300	.50	1.31		1640	3/.489	.0182				
				1310	.24	1.35								
				1333	.03	1.36								
				1400	.15	1.43								
	RG	R-1	.97											
	3 RG	AVG 2/	1.18											
Watershed conditions: 57% farm woods, predominately hardwoods mixed with conifers, good cover; 30% permanent pasture, fair cover of native grasses; 2% corn 5 to 6 feet high; 6% alfalfa and other hay crops, good cover; 4% idle land, good cover; 1% roads.														
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0004902. FOR 30-DAY ANTECEDENT P AND Q; SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ PRIOR TO 0100. 2/ THIESSEN WEIGHTED FOR R-1, R-2, AND R-3. 3/ NORMAL BASE FLOW.														



BLACKSBURG, VIRGINIA CHUB RUN WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA FOSTERS CREEK WATERSHED W-I AREA—389 ACRES										13.14
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	1.79 1.26	1.83 .69	5.81 3.01	1.18 .54	1.18 .34	2.97 .27	2.65 .09	1.53 .05	3.19 .08	.05 .07	6.24 .52	1.77 .59	30.19 7.51		
	STA AV2/ (60-63) P	2.06	3.57	4.83	2.41	3.32	3.34	3.00	2.79	3.33	3.54	3.39	2.99	38.57		
	MEAN P3/ 48 YR Q	1.20	2.24	2.96	1.36	.93	.43	.31	.19	.15	1.86	.48	.72	12.83		
		3.29	2.80	3.66	3.42	3.47	3.57	4.61	4.29	3.22	2.83	2.78	2.99	40.93		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-12	.14	3-12	.13	3-12	.26	3-11	.60	3-11	.97	3-11	1.27	3-11	1.43	3-11	1.98
MAXIMUMS FOR PERIOD OF RECORD																
19 60 TO	10-20	1.71	10-20	.76	10-20	1.02	10-20	2.06	10-20	3.02	10-20	4.96	10-20	5.89	10-20	5.96
19 63	1961		1961		1961		1961		1961		1961		1961		1961	
Notes: Watershed conditions: Permanent pasture, usually a good cover of native grass and clover mixture, 28%; hay mixtures such as alfalfa, orchardgrass, lespedeza and other clovers, 9%; corn, 3%; other cultivated areas, 1%; mixed cover, farm woods, predominately hardwoods, 46%; idle land, usually a good cover of tall weeds, brush and native grass, 11%; road surface, 2%. (Total cultivated, 13%) 1/ Precipitation Thiessen weighted from R-1 and R-2 gages. 2/Determined from continuous records from September 1960 through 1963; precipitation Thiessen weighted. 3/ Mean P based on 48-yr (1916-63) U. S. Weather Bureau record period at Louisa, Va. Records at Mineral, Va., utilized to 1940. During change over, months of Jan. and Feb. 1941 and Mar., Oct., Nov., and Dec. 1940, had missing records.																
1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA FOSTERS CREEK WATERSHED W-I								13.14		
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.13S	.51	.06	.00	.00	.00	.44	.00	.00	1.00	.00				
2	.00	.24	.01	.00	.00	.53	.50	.00	.00	.00	.04	.00				
3	.00	T	.00	.00	.00	1.17	.00	.00	.00	.00	.00	.02				
4	.00	.00	.00	.00	.00	.00	.00	.07	.34	.00	.00	.00				
5	.00	.00	.11	.00	.00	.00	.00	.00	.56	.00	.12	.00				
6	.03	.00	.79	.00	.00	.00	.00	.00	.11	.00	2.41	.00				
7	.00	.00	.00	.00	.00	.76	.00	.02	.00	.00	.33	.00				
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.57				
9	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
11	.12	.35M	1.46	.00	.00	.00	.00	.00	.00	.00	.00	.00				
12	.38	.41M	.96	.00	.00	.00	.00	.00	.00	.00	.00	.09				
13	.24	.07	.00	.00	.00	.00	.00	.23	.00	.00	.00	.02				
14	.00	.00	.00	.00	.02	.00	.58	.00	.11	.00	.00	.23				
15	.00	.00	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00				
16	.00	.00	.40	.00	.00	.00	.00	.00	.00	.00	.00	.00				
17	.00	.00	.41	.17	.63	.00	.00	.00	.00	.00	.00	.00				
18	.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
19	.33	.32M	.81	.00	.00	.00	.04	.35	.00	.00	.00	.00				
20	.29	.00	.00	.00	.00	.37	.02	.08	.00	.00	.00	.00				
21	.00	.00	.00	.00	.10	.03	.00	.13	.00	.00	.00	.00				
22	.00	.00	.00	.09	.00	.00	.45	.11	.00	.00	.00	.00				
23	.10	.00	.00	.00	.00	.00	.42	.01	.00	.00	.56	.82				
24	.00	.16S	.00	.00	.00	.00	.00	.02	.00	.00	.00	.02				
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
26	.12	.15S	.32	.00	.00	.00	.06	.02	.00	.00	.18	.00				
27	.02	.00	.02	.00	.00	.00	.09	.00	.00	.00	.00	.00				
28	.00	.00	.00	.00	.00	.00	.28	.00	.50	.00	.05	.00				
29	.00	-----	.00	.65	.42	.05	.11	.05	1.41	.02	1.55	.00				
30	.00	-----	.00	.19	.01	.06	.00	.00	.00	.00	.00	.00				
31	.00	-----	.01	-----	.00	-----	.10	.00	-----	.00	-----	.00				
TOTAL	1.79	1.83	5.81	1.18	1.18	2.97	2.65	1.53	3.19	.05	6.24	1.77				
STA AV	2.06	3.57	4.83	2.41	3.32	3.34	3.00	2.79	3.33	3.54	3.39	2.99				
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED AMOUNTS FROM GAGES R-1 AND R-2. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, MISC. PUB. 994, P. 13.14-4.																

1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA		FOSTERS CREEK WATERSHED W-I 13.14				
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.22	.26	1.06	.34	.27	.11	.06	.10	.01	.04	.13	.21
2	.22	.33	1.02	.34	.24	.17	.11	.05	T	.04	.14	.15
3	.22	.72	.46	.34	.22	.99	.07	.03	T	.04	.04	.15
4	.20	.31	.39	.31	.20	.24	.06	.04	.02	.04	.04	.13
5	.20	.31	.42	.32	.19	.16	.05	.03	.07	.04	.05	.11
6	.25	.31	3.79	.34	.18	.14	.04	.02	.05	.04	1.64	.11
7	.28	.31	.78	.34	.18	.37	.04	.03	.03	.04	.98	.11
8	.30	.27	.47	.34	.18	.24	.04	.02	.03	.05	.15	.40
9	.44	.25	.39	.34	.17	.16	.04	.02	.02	.05	.10	.27
10	.78	.24	.35	.34	.16	.13	.03	.02	.02	.06	.08	.16
11	3.60	.30	5.60	.32	.17	.12	.03	.02	.02	.06	.08	.13
12	4.44	1.95	16.40	.29	.17	.11	.03	.01	.02	.07	.07	.15
13	1.64	.66	1.87	.28	.17	.09	.03	.03	.02	.04	.06	.13
14	.67	.42	.71	.28	.17	.09	.11	.02	.02	.03	.06	.24
15	.41	.32	.51	.28	.18	.08	.06	.02	.03	.03	.06	.16
16	.33	.28	.87	.28	.19	.08	.04	.02	.04	.03	.06	.13
17	.29	.27	2.98	.32	.30	.08	.03	.02	.03	.03	.06	.13
18	.38	.27	.80	.28	.22	.08	.03	.02	.03	.03	.06	.13
19	.47	.55	3.86	.27	.17	.08	.02	.02	.03	.03	.06	.13
20	1.27	.44	1.46	.23	.16	.13	.03	.04	.03	.04	.06	.13
21	1.04	.34	.66	.22	.18	.12	.03	.03	.04	.04	.06	.11
22	.42	.31	.49	.25	.16	.09	.07	.04	.04	.03	.06	.11
23	.40	.28	.44	.22	.15	.08	.10	.04	.04	.03	.19	.12
24	.29	.27	.42	.22	.14	.07	.05	.02	.03	.03	.13	.13
25	.26	.26	.39	.22	.13	.07	.04	.03	.03	.03	.09	.14
26	.27	.31	.56	.22	.13	.06	.04	.03	.03	.03	.11	.38
27	.32	.32	.55	.22	.13	.06	.04	.02	.03	.04	.11	1.38
28	.27	.36	.40	.21	.12	.06	.07	.02	.03	.04	.10	1.20
29	.23	-----	.36	.36	.19	.06	.05	.02	.43	.04	2.84	.98
30	.22	-----	.36	.52	.17	.06	.04	.02	.04	.04	.77	.92
31	.25	-----	.36	-----	.12	-----	.05	.01	-----	.05	-----	.86
MEAN	.66	.40	1.59	.29	.18	.15	.05	.03	.04	.04	.28	.31
INCHES	1.26	.69	3.01	.54	.34	.27	.09	.05	.08	.07	.52	.59

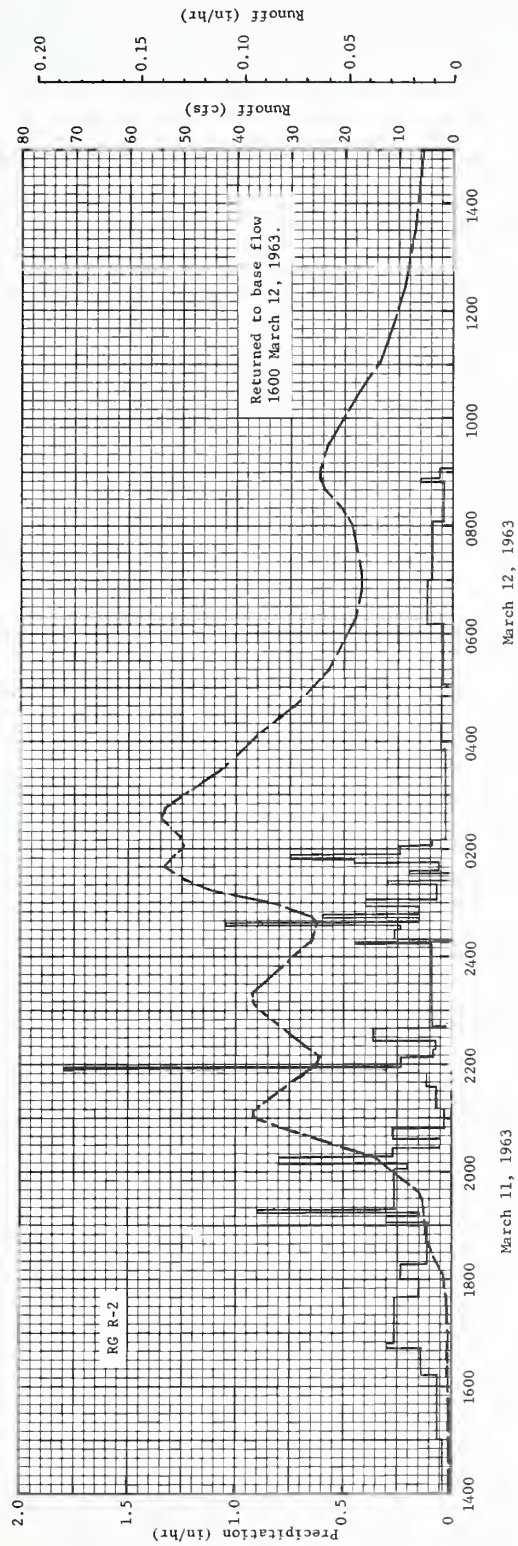
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.061187.

1963			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA			FOSTERS CREEK WATERSHED W-I			13.14
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)			
Event of March 11 and 12, 1963													
3-11	.00	1/.0096	3-11	RG	R-2		3-11						
				1200	.00	.00		1212	.306	.0000			
				1500	.04	.11		1400	.341	.0015			
				1612	.06	.18		1540	.428	.0031			
				1642	.14	.25		1628	.510	.0041			
				1648	.30	.28		1700	.620	.0049			
				1740	.26	.47		1720	.741	.0054			
				1800	.15	.52		1740	1.020	.0062			
				1818	.23	.59		1756	1.428	.0070			
				1902	.11	.67		1804	1.749	.0076			
				1910	.30	.71		1820	3.044	.0092			
				1914	.15	.72		1836	4.142	.0116			
				1916	.90	.75		1848	4.719	.0139			
				2003	.26	.95		1856	4.915	.0155			
				2009	.20	.97		1924	5.382	.0217			
				2015	.80	1.05		1940	6.354	.0256			
				2026	.27	1.10		2016	14.030	.0412			
				2037	.05	1.11		2044	29.485	.0671			
				2048	.27	1.16		2100	36.655	.0896			
				2110	.03	1.17		2108	36.941	.1021			
				2135	.07	1.20		2144	28.928	.1525			
				2150	.12	1.23		2200	25.092	.1709			
				2154	.30	1.25		2208	24.527	.1793			
				2155	1.80	1.28		2256	34.435	.2394			
				2208	.23	1.33		2308	36.565	.2575			
Watershed conditions: 46% farm woods, predominately dormant hardwoods mixed with conifers, good cover; 28% permanent pasture of native grasses and clovers, dormant, good cover; 4% corn stubble; 9% alfalfa and other hay mixtures, good cover; 11% idle land, good cover of dormant weeds and grasses; 2% roads.													

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0025495. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ PRIOR TO 1212.

1963 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA FOSTERS CREEK WATERSHED W-I 13.14							
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of March 11 and 12, 1963 - Continued										
			3-11	2216	.08	1.34	3-11	2320	36.945	.2763
				2225	.07	1.35		2400	29.752	.3329
				2240	.36	1.44	3-12			
				2341	.03	1.47		0020	25.837	.3566
				2400	.09	1.50		0036	25.221	.3739
			3-12					0044	26.080	.3826
				0013	.09	1.52		0100	33.105	.4028
				0017	.45	1.55		0112	44.182	.4225
				0019	.00	1.55		0124	49.630	.4464
				0030	.27	1.60		0140	53.455	.4814
				0035	.24	1.62		0204	49.807	.5341
				0039	1.05	1.69		0212	50.219	.5511
				0043	.15	1.70		0236	53.921	.6042
				0048	.60	1.75		0244	53.278	.6224
				0056	.15	1.77		0328	42.927	.7123
				0102	.40	1.81		0404	36.255	.7729
				0120	.07	1.83		0440	28.967	.8228
				0124	.30	1.85		0520	22.989	.8669
				0132	.00	1.85		0620	17.941	.9191
				0135	.20	1.86		0648	16.831	.9398
				0145	.06	1.87		0708	16.859	.9541
				0149	.45	1.90		0800	18.620	.9933
				0153	.75	1.95		0820	20.526	1.0099
				0203	.24	1.99		0840	23.868	1.0288
				0210	.09	2.00		0852	24.515	1.0412
				0350	.03	2.05		0904	24.476	1.0536
				0450	.05	2.10		0932	23.013	1.0819
				0502	.00	2.10		1024	17.906	1.1271
				0610	.04	2.15		1104	13.646	1.1539
				0700	.12	2.25		1140	11.351	1.1730
				0805	.09	2.35		1228	9.010	1.1938
				0849	.04	2.38		1340	6.790	1.2180
				0853	.15	2.39		1408	6.197	1.2257
				0903	.06	2.40		1600	2/4.860	1.2520
				RG	R-1	2.34				
				2 RG	AVG 1/	2.37				

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0025495. 1/ THIESSEN WEIGHTED FOR R-1 AND R-2. 2/ NORMAL BASE FLOW.



BLACKSBURG, VIRGINIA FOSTER'S CREEK WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA CHESTNUT BRANCH WATERSHED W-I AREA—1,058 ACRES (1.65 SQ. MILES)								13.15		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P ₁ / Q	1.60 .93	2.18 .70	4.87 1.87	.99 .53	2.76 .42	1.42 .24	1.35 .12	.87 .07	4.30 .14	.91 .13	6.11 .55	1.66 .35	29.02 6.05		
STA AV ₂ (60-63)	P ₂ / Q	2.01 .97	4.01 1.44	4.60 2.00	2.39 1.13	2.78 .61	4.33 .72	2.79 .38	2.36 .30	3.90 .32	2.32 .44	4.20 .80	3.05 .89	38.74 10.00		
MEAN 33 YR	P ₃ / Q	3.32	3.01	4.13	3.39	3.95	4.52	4.48	4.98	3.39	2.92	3.08	3.37	44.54		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-12	.03	3-12	.03	3-12	.05	3-12	.13	3-12	.19	3-12	.32	3-12	.42	3-11	.87
MAXIMUMS FOR PERIOD OF RECORD																
19 60 TO 19 63	11-6 1961	.26	11-6 1961	.19	11-6 1961	.27	11-6 1961	.35	3-11 1962	.43	3-11 1962	.60	3-11 1962	.75	2-18 1961	1.42
Notes: Watershed conditions: Permanent pasture, usually a good cover of native grass mixture, 26%; hay mixture such as alfalfa, red clover, lespedeza and native grass, 20%; corn, 4%; tobacco, 1%; small grain, 2%; farm woods, a mixture of hardwoods and pine, 37%; idle land with good cover of weeds and annual grasses, 9%; roads, 1%. (Total cultivated, 27%) 1/ Precipitation Thiessen weighted from R-1, R-2, and R-3 gages. 2/ Determined from continuous records from September 1960 through 1963; precipitation Thiessen weighted. 3/ Mean P based on 33-yr (1931-63) U.S. Weather Bureau record period at Bedford, Va. Missing totals for 16 months were estimated from nearby Weather Bureau records at Lynchburg, Va. (Airport).																
1963 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA CHESTNUT BRANCH WATERSHED W-I								13.15		
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.28S	.78	.00	.00	.00	.10	.00	.00	.00	.74	.00				
2	.00	.22	.00	.00	.00	.09	.00	.00	.00	.00	T	.00				
3	.00	.00	.00	.00	.00	.24	.00	.00	.07	.00	.00	.00				
4	.00	.00	.00	.00	.00	.28	.00	.00	.18	.00	.00	.00				
5	.00	.00	.18	.00	.00	.05	.00	.00	.73	.00	.36	.00				
6	.00	.00	.70	.00	.33	.00	.00	.00	.14	.00	2.56	.00				
7	.00	.00	.00	.00	T	.13	.00	.44	.00	.00	.06	.00				
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.23				
9	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00				
10	T	T	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
11	.40	.30	.61	.00	.00	.00	.00	.00	.00	.00	.00	.07				
12	.34	.57M	1.13	.00	.00	.00	.00	.00	.00	.00	.00	.18				
13	.00	.00	.00	.00	.07	.00	.01	.04	1.14	.00	.00	.03				
14	.00	.00	.00	.00	.00	.00	.42	.00	.03	.00	.00	.10				
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
16	.00	.00	.41	.00	.00	.30	.00	.00	.00	.00	.00	.00				
17	.00	.00	.69	.05	1.38	.01	.11	.00	.00	.00	.00	.00				
18	.12	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00				
19	.28	.43	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00				
20	.29	.00	.00	.02	.18	.26	.00	.00	.00	.00	.00	.00				
21	.00	.00	.00	.00	.03	.06	.00	.01	.02	.00	.00	.00				
22	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00				
23	.11	.00	.00	.00	.01	.00	.12	.00	.00	.34	.39	.89S				
24	.01	.19S	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03S				
25	.00	.00	.00	.00	.00	.00	.00	.21	.00	.00	.00	.00				
26	.04L	.19S	.36	.00	.00	.00	.21	.17	.00	.00	.08	.00				
27	.01L	.00	.00	.00	.07	.00	.00	.00	.00	.16	.00	.00				
28	.00	.00	.00	.00	.14	.00	.33	.00	1.05	.14	.00	.00				
29	.00	-----	.00	.87	.47	.00	.01	.00	.94	.27	1.92	.00				
30	.00	-----	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00				
31	.00	-----	.00	-----	.00	-----	.04	.00	-----	.00	-----	.13M				
TOTAL	1.60	2.18	4.87	.99	2.76	1.42	1.35	.87	4.30	.91	6.11	1.66				
STA AV	2.01	4.01	4.60	2.39	2.78	4.33	2.79	2.36	3.90	2.32	4.20	3.05				
NOTES: PRECIPITATION VALUES ARE THIESSEN WEIGHTED AMOUNTS FROM R-1, R-2 AND R-3. STA AV IS FOR PERIOD SEPTEMBER 1960 THROUGH 1963. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, MISC. PUB. 994, P. 13.15-5.																

1963 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA CHESTNUT BRANCH WATERSHED W-I 13.15						
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC
1	1.25	.96	4.48	.99	.65	.49	.23	.14	.06	.19	.41	.98
2	1.08	.96	3.72	.94	.63	.48	.27	.11	.06	.18	.42	.79
3	1.03	.96	1.97	.94	.62	.59	.22	.09	.06	.18	.29	.70
4	.99	.96	1.65	.90	.60	.53	.19	.10	.14	.16	.28	.62
5	1.03	.96	1.58	.84	.60	.51	.20	.09	.39	.16	.33	.57
6	1.13	.96	6.80	.84	.66	.44	.18	.07	.32	.17	3.15	.51
7	1.22	.96	2.44	.87	.64	.45	.20	.19	.17	.17	2.38	.49
8	1.19	.91	1.78	.90	.57	.47	.18	.14	.14	.18	.67	.55
9	1.16	.84	1.51	.87	.55	.44	.18	.12	.13	.18	.50	.52
10	1.12	.84	1.32	.81	.52	.37	.17	.10	.12	.17	.44	.47
11	2.19	.87	1.45	.78	.50	.38	.17	.09	.11	.18	.39	.46
12	4.51	2.86	13.86	.78	.50	.32	.16	.10	.12	.18	.35	.61
13	2.25	1.79	4.88	.78	.55	.31	.16	.11	.49	.18	.34	.54
14	1.62	1.42	2.55	.78	.51	.31	.30	.07	.27	.18	.34	.49
15	1.33	1.11	1.93	.77	.47	.30	.20	.06	.19	.18	.34	.47
16	1.14	.93	1.98	.77	.49	.39	.17	.06	.18	.18	.34	.42
17	1.05	.90	8.32	.80	1.45	.38	.19	.06	.16	.17	.34	.42
18	1.24	.90	2.99	.77	.78	.34	.17	.06	.15	.17	.34	.42
19	1.12	1.38	2.23	.75	.61	.31	.14	.06	.15	.17	.34	.42
20	1.62	1.21	1.83	.71	.57	.37	.14	.05	.13	.17	.34	.42
21	1.78	1.07	1.61	.70	.62	.37	.13	.07	.13	.17	.34	.42
22	1.34	1.01	1.42	.70	.53	.30	.13	.09	.12	.17	.34	.42
23	1.22	1.01	1.33	.65	.50	.29	.16	.06	.13	.26	.46	.42
24	1.03	1.01	1.29	.62	.49	.26	.17	.05	.12	.21	.37	.42
25	.95	1.01	1.21	.65	.49	.26	.14	.05	.12	.19	.34	.42
26	.81	1.01	1.37	.66	.49	.25	.17	.17	.14	.19	.35	.42
27	.89	1.01	1.25	.63	.52	.22	.14	.14	.12	.20	.36	.42
28	.92	1.09	1.12	.63	.59	.22	.12	.14	.18	.23	.34	.42
29	.97	-----	1.05	1.00	.89	.20	.18	.12	1.46	.30	7.30	.42
30	1.01	-----	1.00	.85	.58	.22	.16	.11	.22	.21	1.70	.42
31	.99	-----	.99	-----	.49	-----	.16	.07	-----	.22	-----	.42
MEAN	1.33	1.10	2.67	.79	.60	.36	.18	.09	.21	.19	.81	.50
INCHES	.93	.70	1.87	.53	.42	.24	.12	.07	.14	.13	.55	.35

NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.022497.

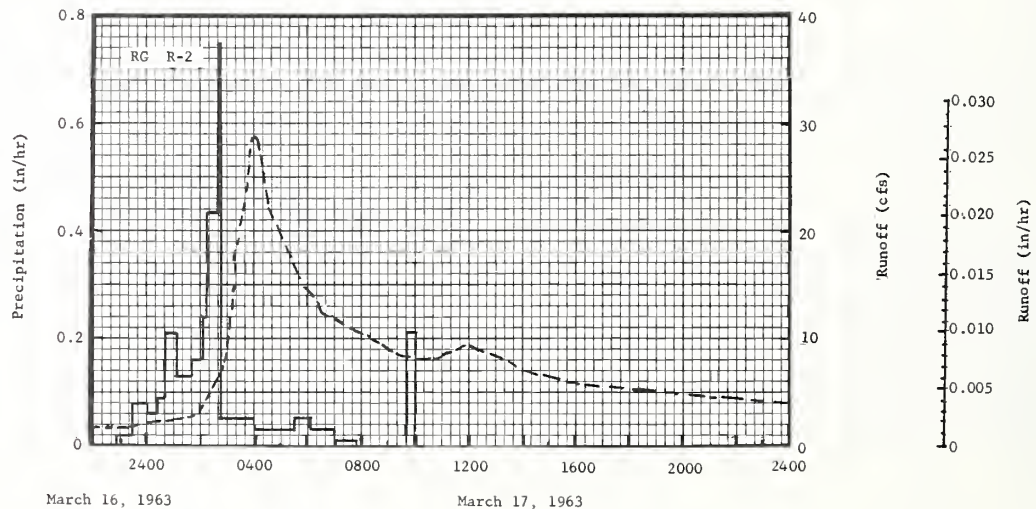
1963 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA CHESTNUT BRANCH WATERSHED W-I 13.15						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)		
Event of March 16 and 17, 1963												
3-16	RG R-2 1/ .30	3/ .0438	3-16	RG	R-2		3-16	2332	1.942	.0000		
				2254	.00	.00		2400	2.080	.0009		
				2324	.02	.01						
3-16	RG R-3 2/ .32		3-17	2400	.08	.06	3-17	0100	2.326	.0030		
				0021	.06	.08		0124	2.582	.0039		
				0040	.09	.11		0144	2.838	.0047		
				0108	.21	.21		0150	2.998	.0050		
				0140	.13	.28		0204	3.606	.0057		
				0202	.16	.34		0220	4.769	.0068		
				0217	.24	.40		0228	5.345	.0074		
				0219	.30	.41		0240	6.198	.0085		
				0240	.43	.56		0248	7.105	.0093		
				0244	.75	.61		0300	9.516	.0109		
				0320	.05	.64		0308	11.394	.0122		
				0400	.05	.67		0316	14.253	.0138		
				0530	.03	.71		0324	18.179	.0158		
				0608	.05	.74		0332	20.067	.0182		
				0700	.03	.77		0344	23.075	.0222		
				0750	.01	.78		0352	26.436	.0253		
				0940	.00	.78		0356	28.388	.0270		
				1000	.21	.85		0404	28.580	.0306		
								0408	27.844	.0324		
								0413	26.468	.0345		
			3-16	RG	R-3			0415	27.054	.0353		
				2320	.00	0.00		0420	25.753	.0374		
				2333	.14	.03		0436	22.574	.0434		
				2340	.09	.04		0448	20.483	.0475		
				2350	.06	.05		0520	18.040	.0571		
				2400	.18	.08		0544	15.640	.0634		

Watershed conditions: 37% farm woods, a mixture of dormant hardwoods and conifers, good cover; 26% permanent pasture, good cover of dormant native grasses and clover; 20% alfalfa and other hay mixtures, mostly dormant, good cover; 6% corn and tobacco stubble; 2% small grain, fair cover; 8% idle land, good cover of dormant weeds and grass; 1% roads.

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0009374. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ OCCURRED BETWEEN 1140 AND 1620. 2/ OCCURRED BETWEEN 1140 AND 1430. 3/ PRIOR TO 2332.

1963			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA				CHESTNUT BRANCH WATERSHED W-I				13.15	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of March 16 and 17, 1963 - Continued																
			3-17	RG	R-3		3-17									
				0010	.06	.09		0556	14.882	.0663						
				0030	.06	.11		0612	14.125	.0699						
				0045	.08	.13		0624	13.698	.0725						
				0100	.20	.18		0628	13.282	.0734						
				0125	.24	.28		0636	12.556	.0750						
				0220	.11	.38		0640	12.588	.0758						
				0235	.20	.43		0700	11.948	.0796						
				0254	.44	.57		0820	10.092	.0934						
				0305	.05	.58		0908	8.961	.1005						
				0310	.24	.60		0944	8.460	.1054						
				0330	.06	.62		1020	8.204	.1101						
				0344	.04	.63		1044	8.214	.1132						
				0430	.07	.68		1110	8.748	.1166						
				0452	.03	.69		1136	9.004	.1202						
				0600	.04	.73		1148	9.260	.1219						
				0630	.06	.76		1208	9.239	.1248						
				0710	.03	.78		1420	6.881	.1415						
				0830	.01	.79		1620	5.846	.1534						
				0930	.00	.79		1820	5.227	.1638						
				1040	.04	.84		2132	4.481	.1783						
								2400	2/4.001	.1882						
				RG	R-1	.72										
				2 RG	AVG 1/	.80										

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0009374. 1/ THIESSEN WEIGHTED FOR R-1, R-2, AND R-3. 2/ NORMAL BASE FLOW.



BLACKSBURG, VIRGINIA CHESTNUT BRANCH WATERSHED W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)						IOWA CITY, IOWA RALSTON CREEK 1/ AREA—1930 ACRES (3.01 SQ. MILES)								
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	P 2/	.68	.40	2.37	3.46	3.34	.23	8.86	2.90	1.44	.33	3.00	.55	27.56
	Q 3/	.16	.30	1.58	.34	.58	.04	.41	.07	.02	.00	.08	.01	3.59
STA AV 2/P		1.11	1.07	1.99	2.78	3.57	4.50	3.99	3.39	3.43	2.58	2.11	1.21	31.73
(25-63) Q		.44	.94	1.30	.70	.66	.75	.53	.31	.30	.29	.39	.26	6.87
MEAN P 4/ 113 YR		1.50	1.40	2.28	2.82	3.97	4.48	3.91	3.54	3.83	2.55	2.04	1.53	33.85

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	5-12	.08	5-12	.07	5-12	.10	5-12	.14	5-12	.16	5-12	.19	5-12	.26	5-11	.37

MAXIMUMS FOR PERIOD OF RECORD

1925 to	7-18	.86	7-18	.65	7-14	.93	7-14	2.23	7-14	2.52	7-13	2.62	7-13	2.72	3-18	4.15
1963	1956		1956		1962		1962		1962		1962		1962		1962	

Notes: Watershed Conditions: Approximately 40% of area is cultivated; 35% in pasture; 20% in brush, timber and orchards; and 5% in urban development, roads and farmsteads. 1/ Area revised from 1926 to 1930 on more precise measurements. 2/ Precipitation-Thiessen weighted average of five recording rain gages. 3/ Precipitation and runoff records began Sept. 1924; runoff records furnished by U.S. Geological Survey. 4/ Mean P based on 113-yr (1851-1963) U.S. Weather Bureau record period at Dubuque, Iowa

SOILS: (Revision) The soils of this area developed on loess underlain by glacial till. The predominant soil, Fayette, is a moderately dark brown silt loam, moderately permeable and well drained.

Type	Percent of area	Average depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Permeability	Structure	Permeability	Average depth to (in.)	Permeability	
Fayette silt loam	78	4	Moderate fine platy	Moderate	Strong fine subangular blocky	Moderate	60	Moderate	Medium
Chaseburg silt loam	5/11	36	Weak fine granular	Moderate	Moderate fine to medium subangular blocky	Moderate	60	Moderate	Medium
Nodaway silt loam		36	Weak fine to coarse platy	Moderate	Weak fine to coarse platy	Moderate	60	Moderately slow	Medium
Downs silt loam	9	9	Weak fine granular and weak fine platy	Moderate	Moderate fine to medium subangular blocky	Moderate	60	Moderate	Medium
Atterberry silt loam	2	14	Moderate fine granular to moderate fine platy	Moderate	Moderate fine to medium subangular blocky	Moderately slow	60	Moderate	Slow

5/ These soils were mapped as the Chaseburg-Nodaway complex and no aerial separation made.

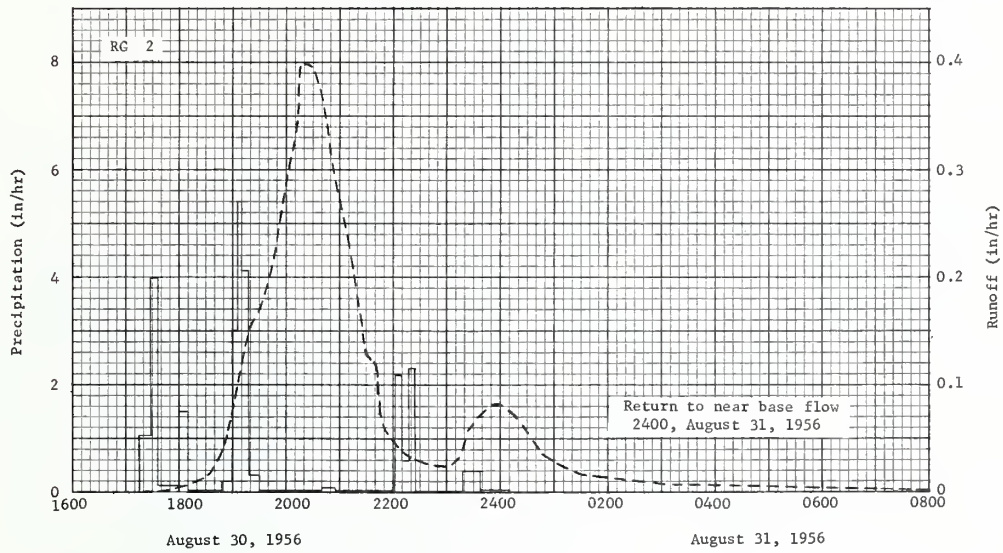
GEOLOGY: The stratigraphy from surface downward contains Peorian loess, Loveland loess, Nebraskan drift, and bedrock. The bedrock is indurated rock, chiefly limestone and dolomite of sedimentary or modified sedimentary origin. The dip of the rocks is west-southwest. The regional dip is interrupted by minor flexures in this area; however, these are mantled by Pleistocene deposits and are not reflected in the surface topography. The bedrock is overlaid by Nebraskan drift and gravels having a probable depth of 50-75 ft. This drift consists of an unoxidized and unleached layer, grading upward into an oxidized and unleached layer, grading upward into an oxidized and leached layer, and grading upward into a layer of gumbotil 6-8 ft. thick. Elsewhere in the county the Kansan drift overlies the Nebraskan drift; however, if it is present at this location, it is extremely thin. This glacial material is generally slowly permeable and may contain associated lenses of sand and gravel. The drift is overlaid by 30-40 ft. of loess. The lower 8- to 10-foot layer is Loveland loess, and the remainder is Peorian loess. The contact between the gumbotil and the overlying, compact Loveland loess often forms a zone of seepage. The topography represents an old erosional topography in the drift which has been modified but not obliterated by the loess mantle. Source of data: The Pleistocene of Iowa by George F. Key, et al, 1943.

GENERALLY REPRESENTS: (Revision) General diversified farming of the former Upper Mississippi loess Hills, problem area (C10), having medium internal drainage, good surface drainage, and moderate to severe erosion, now designated as the following land resource areas: Illinois and Iowa Deep Loess and Drift (M-108) and Northern Mississippi Valley Loess Hills (M-105).

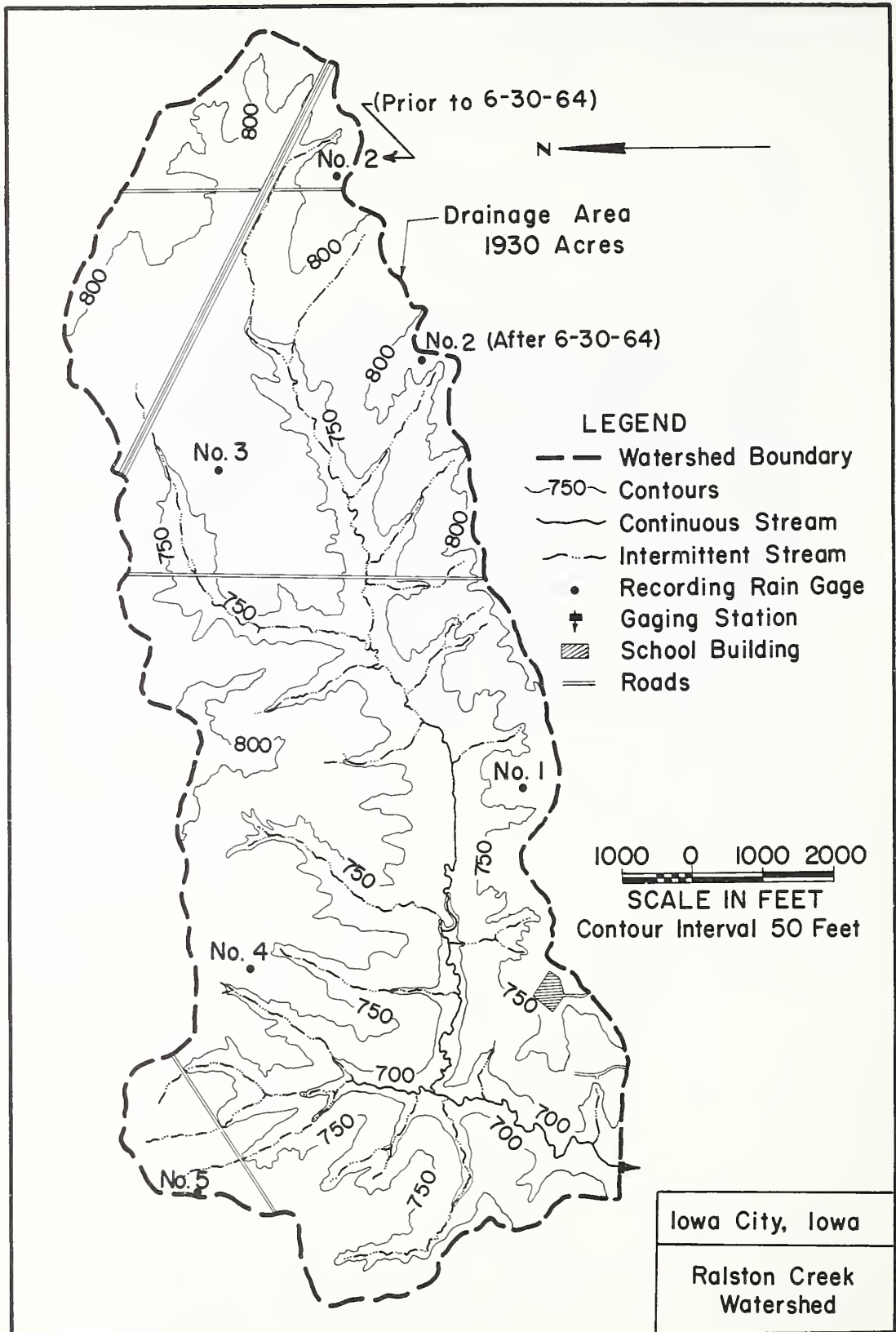
1956 SELECTED RUNOFF EVENT			IOWA CITY, IOWA RALSTON CREEK						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF		
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
Event of August 30-31, 1956									
	'5 RC 1/								
7-31	2.25	.5190	8-30	RG	2		8-30	1720	.0000
8-1	.93	.1730		1715	.00	.00		1725	.0001
8-2	.04	.0036		1728	1.06	.22		1730	.0005
8-3	.00	.0014		1736	3.98	.75		1800	.0046
8-4	.00	.0005		1800	.13	.80		1830	.0146
8-5	.04	.0001		1810	1.50	1.05		1845	.0339
8-7	.01	.0000		1848	.02	1.06		1900	.0818
8-8	.08	.0000		1900	.20	1.10		1912	.127
8-9	.08	.0000		1905	3.00	1.35		1920	.152
8-10	.33	.0000		1910	5.40	1.80		1930	.169
8-12	.49	.0108		1917	4.12	2.28		1940	.196
8-13	.00	.0033		1930	.32	2.35		1950	.239
8-14	.00	.0001		2040	.02	2.37		2000	.287
8-16	.21	.0000		2055	.08	2.39		2010	.330
8-17	.78	.1483		2202	.02	2.41		2015	.397
8-18	.91	.1730		2210	2.18	2.70		2025	.398
8-19	.00	.0033		2217	.60	2.77		2035	.381
8-20	.00	.0011		2224	2.31	3.04		2050	.311
8-21	.00	.0004		2318	.01	3.05		2100	.276
8-28	.07	.0000		2338	.39	3.18		2110	.231
8-30	2/ .30	.0000	8-31	0010	.04	3.20		2120	.177
								2130	.127
								2140	.119
								2147	.0721
								2200	.0484
			8-30	RC	5			2230	.0303
				1705	.00	.00		2300	.0255
				1708	1.00	.05		2315	.0339
				1718	.30	.10		2330	.0654
				1725	1.97	.33		2400	.0818
				1730	1.44	.45	8-31	0015	.0721
				1736	.50	.50		0030	.0567
				1800	.00	.50		0045	.0376
				1803	3.00	.65		0100	.0289
				1806	1.60	.73		0130	.0175
				1853	.05	.77		0200	.0131
				1900	.69	.85		0230	.0108
				1908	3.75	1.35		0300	.0085
				1911	5.00	1.60		0400	.0060
				1915	1.50	1.70		0500	.0043
				1920	.48	1.74		0600	.0033
				1933	.14	1.77		0700	.0023
				2036	.03	1.80		0930	.0013
				2044	.38	1.85		1200	.0009
				2158	.00	1.85		1500	.0007
				2201	2.00	1.95		1800	.0005
				2208	.00	1.95		2100	.0004
				2211	1.00	2.00		2400	3/ .0003
				2314	.00	2.00			.9052
				2320	1.10	2.11			.9066
				2327	.51	2.17			.9077
				2400	.05	2.20			
				RC	1	2.65			
				RC	3	3.13			
				RC	4	2.24			
				5 RG	AVC 1/	2.71			

Watershed conditions: Corn
nearing maturity; oats har-
vested; alfalfa and clover-
variable.

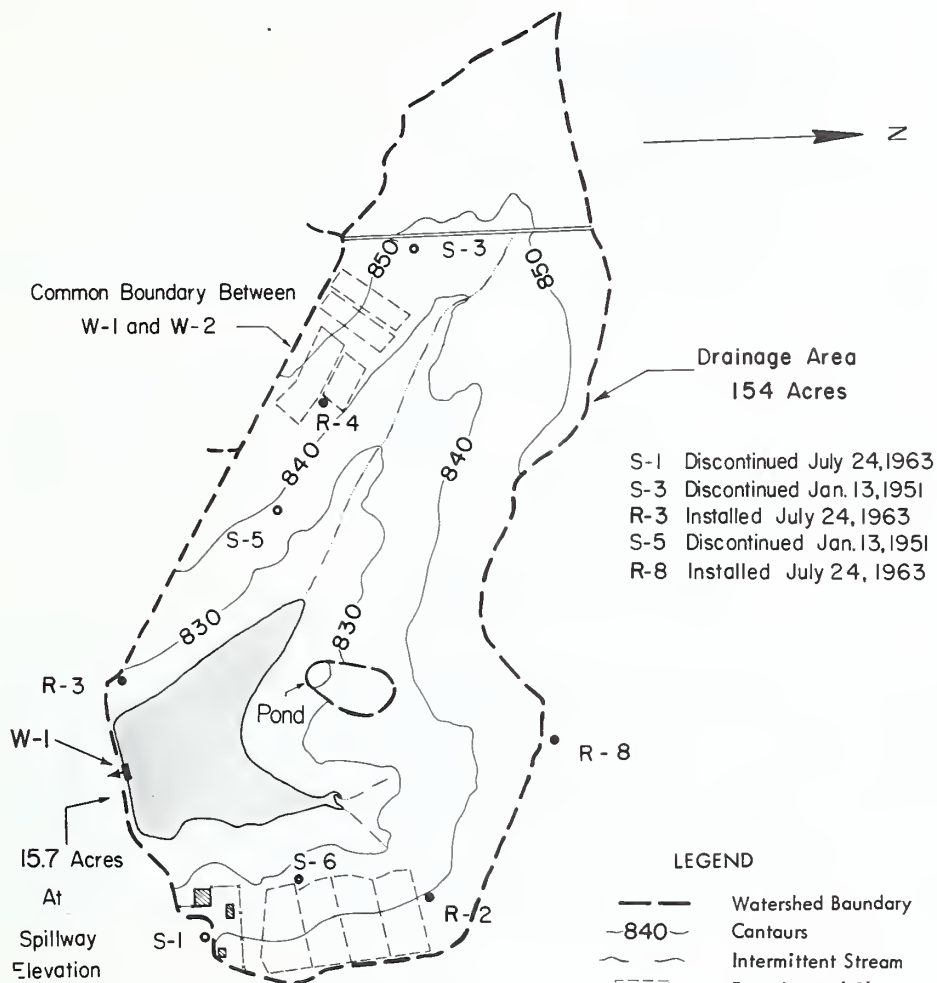
Notes: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1946.08. 1/ THIESSEN WEIGHTED AVERAGE OF FIVE RECORDING RAIN
GAGES. 2/ RAINFALL FROM 0800 TO 1400. 3/ RETURN TO NEAR BASE FLOW.



IOWA CITY, IOWA RALSTON CREEK



REVISION OF PREVIOUSLY PUBLISHED MAP



500 0 500 1000 1500

SCALE IN FEET

Contour Interval 10 Feet

LEGEND

- Watershed Boundary
- ~840~ Contours
- ~ Intermittent Stream
- - - Experimental Plots
- Reservoir Area
- Standard Rain Gage
- Recording Rain Gage
- ⊥ Runoff Gaging Station
- ▨ Building
- x - Fence
- == Road

MC CREDIE, MISSOURI
 REVISED TOPOGRAPHIC MAP
 OF
 STATION RESERVOIR
 WATERSHED W-1

McCREDIE, MISSOURI STATION RESERVOIR WATERSHED W-1

LOCATION: Callaway County, Mo.; 1 mile southeast of McCredie; Crows Fork Creek, Auxvasse Creek, Missouri River Basin.

AREA: 154 acres. (Revised in 1962 from 153 acres)

<u>SLOPES:</u> (Revision)	Slope—Percent	0-2	2-5	5-9
	Percent of area	13	80	7

SOILS: (Revision) The soils of this area developed in loess and loess-like glacial material. The Mexico series consists of moderately dark colored, imperfectly drained, planosolic soils integrating to the grey-brown podzolics. They have silt loam A horizons, silty clay loam B1 horizons and heavy silty clay B2 horizons. The Gara loam soils are located on the steeper slopes where the loess is thinner.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Average depth (in.)	Structure	Permeability	Structure	Permeability	Average depth to (in.)	Permeability	
Mexico silt loam	93	12	Weak fine to medium granular	Moderately rapid	Moderate very fine to fine angular blocky	Slow	32	Slow	Slow
Gara loam	7	12	Moderate fine to medium granular	Rapid	Weak fine to medium subangular blocky	Moderate	32	Moderate	Medium

<u>EROSION:</u> (Revision)	Erosion class	1	2	3
	Percent of area	20	62	18

<u>LAND CAPABILITY:</u> (Revision)	Class	I	II	III	IV
	Percent of area	0	0	97	3

GEOLOGY: Bedrocks present are of the Pennsylvanian Age and have surficial deposits of glacial till. The Desmoinesian series represents the Pennsylvanian strata. This series is extensively distributed and crops out in a broad, continuous band across western and northern Missouri from which it dips in a northwesterly direction. The watershed is near the southern edge of the outcrop. Either of two similar groups within the Desmoinesian series, the Cherokee or Marmaton, may be present. These are made up of sandstone, siltstone, shale, limestone, underclay, and coal beds. The surficial deposit over the bedrock is glacial till deposited by either the Nebraskan or Kansan glacier. This has a probable depth of 25-40 ft. The till generally consists of an unleached and unoxidized layer (blue clay), grading upward into unleached and oxidized calcareous till (yellow clay), grading upward into a leached and oxidized layer lacking limestone, and grading upward into gumbotil which may range from 5-15 ft. thick. The gumbotil has been overlaid with a loess cap, now 2-6 ft. deep, of probable Wisconsinian Age. Water percolation through the glacial till is extremely slow. As a result, ground water accretion and discharge are very slow. There are no significant water bearing formations within 200 ft. of the surface. Source of data: The Stratigraphic Succession in Missouri by Howe and Koenig, 1961; Geology and Soils Manual, State Highway Department of Missouri, 1962.

SURFACE DRAINAGE: (Revision) Good; length of principal waterway, 3400 ft.; common boundary with Watershed 2 for 1240 ft. along the southwest border; no surface water discharge from the small pond, although seepage may exist; the small drainage area, less than 2 acres, above the pond is excluded from the watershed area.

CHARACTER OF FLOW: Ephemeral; continuous

INSTRUMENTATION: (Revision) Runoff: FW-1 recorder on a 15.7 acre reservoir with discharge controlled by a 2.5 x 2.5 ft. concrete drop inlet with culvert outlet. Precipitation: five recording rain gages and one standard rain gage.

Year(s)	Percent of Watershed in:				
	Pasture ^{1/} and Meadow	Alfalfa	Row Crops ^{2/}	Small Grain	Roads and Farmstead
1939-42	90		4		6
1943-44	78		16		6
1945	90		4		6
1946-47	79		15		6
1948-49	70		24		6
1950	70		17	7	6
1951-52	75		19		6
1953-61	64		30		6
1962	61		28	5	6
1963	43	22	29		6

^{1/} Pasture conditions: 1939-45, very poor; 1946-50, poor; 1951-63, fair to good.

^{2/} Crops of corn and soybeans.

GENERALLY REPRESENTS: (Revision) Mixed-cover on the gently rolling or undulating claypan prairie, breaking into timbered glacial soils on the rolling slopes common to the old Central Claypan Area problem area C8, now revised to Central Claypan Areas land resource area (M-113) of northeast Missouri and south central Illinois.

RE-EVALUATION OF PREVIOUSLY PUBLISHED MONTHLY PRECIPITATION AND RUNOFF (inches) 1/						McCREIDIE, MISSOURI STATION RESERVOIR WATERSHED W-1								
MONTH YEAR		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1941	P	2.81	.17	.76	6.71	1.94	4.15	7.21	2.42	6.66	17.77	2.47	1.09	54.16
	Q	.75E	.10E	.00E	4.25	.01	.12	2.37	.00	.22	14.09	1.25	.30	23.46
1942	P	.48	2.62	1.73	2.68	4.57	10.26	2.17	2.49	4.33	1.95	3.89	4.83	42.00
	Q	.05	1.60	.60	.82	.11	5.26	.00	.00	.18	.10	.96	4.44	14.12
1943	P	.66	.80	1.79	2.40	12.00	6.23	3.68	1.17	3.16	3.32	1.10	1.73	38.04
	Q	.00	.18	.39	.00	7.96	3.16	.14	.00	.00	.00	.00	.00	11.83
1944	P	.45	2.50	3.04	6.13	4.59	.47	1.84	6.55	4.18	1.78	1.42	1.12	34.07
	Q	.23	1.55	1.03	3.69	.93	.00	.00	.13	.47	.95	.00	.00	8.98
1945	P	.89	1.86	5.69	5.42	5.01	7.62	.74	.89	13.21	.85	.95	.57	43.70
	Q	.60	1.48	3.90	2.47	2.22	3.64	.04	.00	6.28	.04	.11	.00	20.78
1946	P	2.23	1.93	2.63	2.97	6.15	1.34	1.71	4.76	1.23	5.95	5.31	1.05	37.26
	Q	1.64	1.15	.52	.02	2.87	.00	.00	.00	.00	.45	3.48	.09	10.22
1947	P	.83	.14	3.05	6.58	3.15	7.70	2.90	.29	2.71	3.24	1.21	1.72	33.52
	Q	.16	.00	1.94	4.55	.03	1.63	.14	.00	.02	.00	.00	.06	8.53
1948	P	1.25	1.37	4.41	.93	3.51	7.01	6.43	4.34	2.05	3.61	3.30	1.26	39.47
	Q	.03	.71	2.88	.00	.26	1.12	1.99	.41	.04	.07	1.58	.55	9.64
1949	P	5.55	2.43	4.67	1.79	3.53	6.03	3.67	4.93	5.08	4.68	.88	3.07	46.31
	Q	3.53	1.56E	3.39	.02	.04	.54	.03	.68	1.17	1.66	.09	1.27	13.98
1950	P	2.32	1.66	2.69	3.12	2.07	3.20	2.19	5.15	.82	1.04	1.35	.13	25.74
	Q	1.55	.38	1.37	.64	.00	.08	.00	.00	.00	.00	.00	.00	4.02
1951	P	1.55	4.11	3.83	2.04	2.85	6.61	2.39	4.27	5.74	3.66	1.68	1.79	40.52
	Q	.00	1.61	2.49	.77	.03	.50	.00	.00	.90	.88	.94	.70E	8.82
1952	P	1.13	1.20	3.48	2.68	2.24	3.48	2.41	4.69	1.23	.22	4.19	1.48	28.43
	Q	.62	.78	2.02	1.92	.00	.06	.00	.00	.00	.00	.00	.00	5.40
1953	P	1.44	1.01	3.62	3.00	3.78	3.61	1.92	2.11	2.44	2.73	.63	.72	27.01
	Q	.06	.00	.87	.33	.85	.01	.08	.00	.00	.00	.00	.00	2.20
1954	P	.71	.76	2.01	3.55	3.58	2.46	.21	5.31	1.93	4.66	1.07	1.56	27.81
	Q	.00	.00	.00	.00	.00	.00	.00	.00	.00	.21	.00	.00	.21
1955	P	2.01	3.06	1.28	3.06	3.10	4.97	2.78	2.72	3.80	4.52	.63	.18	32.11
	Q	.72	.90	.09	.34	.02	.21	.02	.00	.05	.44	.00	.00	2.79
1956	P	.39	1.20	.39	2.51	4.43	1.73	9.08	2.76	.64	1.20	1.64	2.83	28.80
	Q	.00	.00	.00	.04	.02	.00	1.44	.00	.00	.00	.03	.05	1.58
1957	P	1.32	2.13	2.76	5.48	4.36	6.46	2.62	.39	1.27	2.83	1.97	2.84	34.43
	Q	.02	.36	.72	2.31	.25	1.72	.00	.00	.00	.00	.00	.03	5.41
1958	P	1.23	1.08	3.01	2.70	3.34	5.32	9.32	2.78	3.10	2.10	3.01	.39	37.38
	Q	.05	.41	1.50	.30	.47	.81	3.57	.56	.00	.09	.16	.00	7.92
1959	P	1.57	2.72	2.32	2.47	5.34	.06	3.21	2.19	4.57	6.00	.58	1.97	33.00
	Q	.56	1.93	.87	.27	.74	.00	.00	.00	.07	1.78	.00	.15	6.37
1960	P	1.22	1.47	1.65	4.34	2.99	3.48	3.73	1.27	.68	4.06	1.29	2.10	28.28
	Q	.24	.48	1.84	1.00	.42	.02	.20	.00	.00	.06	.00	.05	4.31
1961	P	.16	1.82	3.98	4.64	5.16	5.44	5.56	1.86	6.27	2.12	3.07	1.39	41.47
	Q	.00	.14	1.18	1.89	2.69	.49	.92	.00	.47	.00	.78	.55	9.11
1962	P	1.26	2.21	2.65	1.39	2.50	1.42	3.29	1.73	4.18	2.67	.67	1.20	25.17
	Q	.78	1.78	2.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.90
1963	P	.42	.11	3.38	2.75	4.14	1.28	3.81	4.22	1.81	1.57	1.66	.36	25.51
	Q	.00	.00	.17	.03	.00	.01	.00	.00	.00	.00	.00	.00	.21
STA AV	P	1.39	1.67	2.82	3.45	4.10	4.36	3.60	3.01	3.53	3.59	1.91	1.54	34.97
(41-63)	Q	.50	.74	1.31	1.12	.87	.84	.48	.08	.43	.91	.41	.36	8.05
MEAN P	2/	1.84	1.80	2.91	3.66	4.71	4.62	3.52	3.75	4.30	2.89	2.18	1.80	37.98
	74 YR													
NOTES: 1/ These revised values are the result of a more detailed and accurate computation of the data. Some values may be less than actual (within 5%), because pond evaporation during inflow was not considered. Precipitation data—Thiessen weighted average of rain gages R-2 and R-4 (1941-1960); rain gages R-4 and S-6, located at R-6 site, (1961-1963). 2/ Mean P based on 74-yr (1890-1963) U.S. Weather Bureau record period at Columbia, Mo.														

NOTES: 1/ These revised values are the result of a more detailed and accurate computation of the data. Some values may be less than actual (within 5%), because pond evaporation during inflow was not considered. Precipitation data—Thiessen weighted average of rain gages R-2 and R-4 (1941-1960); rain gages R-4 and S-6, located at R-6 site, (1961-1963). 2/ Mean P based on 74-yr (1890-1963) U.S. Weather Bureau record period at Columbia, Mo.

McCREDIE, MISSOURI STATION RESERVOIR WATERSHED W-1

RE-EVALUATION OF PREVIOUSLY PUBLISHED
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS 1/

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1941	10-4	2.02	10-4	1.20	10-4	1.96	10-4	3.94	10-4	6.97	10-4	7.74	10-3	8.06	10-2	8.80
1942	12-26	.98	6-26	.64	6-26	1.08	6-26	2.03	12-26	2.81	12-26	3.06	12-26	3.57	12-21	4.09
1943	5-17	.70	6-8	.52	6-8	.76	5-7	1.11	5-17	2.05	5-17	3.32	5-16	3.59	5-10	5.21
1944	4-10	.66	4-10	.46	4-10	.80	4-10	1.20	4-10	1.42	4-10	1.63	4-10	1.77	4-22	1.89
1945	6-7	1.06	6-7	.80	6-7	1.20	6-7	2.17	6-7	2.38	6-7	2.42	9-21	3.22	9-21	5.83
1946	1-9	.46	1-9	.37	1-9	.58	5-10	.95	5-9	1.09	5-10	1.65	5-9	1.87	10-31	2.80
1947	4-1	.47	4-24	.24	4-24	.44	4-24	1.08	4-24	1.62	4-24	1.88	4-23	2.43	4-20	2.84
1948	3-21	.48	3-21	.41	3-21	.67	3-21	.98	3-21	1.07	11-1	1.15	3-21	1.77	3-21	2.02
1949	3-30	.70	3-26	.47	3-26	.69	3-30	1.23	3-30	1.31	3-30	1.36	10-20	1.66	3-25	2.76
1950	1-13	.15	1-13	.13	1-13	.25	1-13	.54	1-13	.66	1-13	.70	1-2	.84	3-14	.95
1951	3-17	.47	3-17	.40	3-17	.67	3-17	.98	3-17	1.06	3-16	1.22	3-16	1.35	3-10	2.05
1952	3-31	.35	3-31	.27	3-31	.43	3-31	.62	3-31	.68	3-18	.75	3-18	.81	3-31	1.45
1953	5-22	.14	5-22	.11	5-22	.17	5-4	.29	5-4	.37	5-4	.41	5-4	.45	3-1	.57
1954	10-14	.07	10-14	.05	10-14	.07	10-14	.07	10-11	.08	10-10	.10	10-10	.13	10-10	.21
1955	1-5	.16	1-5	.12	1-5	.17	1-4	.27	1-5	.31	1-4	.62	1-4	.69	2-19	.81
1956	7-16	.55	7-16	.35	7-16	.50	7-15	.77	7-15	.81	7-15	.81	7-15	.81	7-15	.84
1957	6-29	1.04	6-29	.71	6-29	.92	6-29	1.41	6-29	1.66	6-29	1.70	6-29	1.72	6-29	1.72
1958	7-4	.31	7-19	.19	7-19	.30	7-31	.53	7-19	.67	7-19	.80	7-30	1.11	7-15	1.97
1959	10-10	.38	10-10	.35	10-10	.58	2-9	.86	2-9	1.58	2-9	1.78	2-9	1.83	2-9	1.93
1960	3-27	1.56	3-27	.79	3-27	1.02	3-27	1.41	3-27	1.52	3-27	1.61	3-27	1.70	3-27	1.90
1961	5-5	.41	5-5	.28	5-5	.47	5-5	.91	5-5	1.14	5-5	1.25	5-5	1.33	5-4	2.51
1962	3-20	.28	3-20	.24	3-20	.45	3-20	1.05	3-20	1.63	3-20	1.87	3-20	1.95	3-17	2.06
1963	6-27	.12	4-28	.01	3-4	.02	3-4	.05	3-8	.06	3-8	.08	3-8	.08	3-4	.16
MAXIMUMS FOR PERIOD OF RECORD 1/																
1941 TO 1963	10-4 1941	2.02	10-4 1941	1.20	10-4 1941	1.96	10-4 1941	3.94	10-4 1941	6.97	10-4 1941	7.74	10-3 1941	8.06	10-2 1941	8.80

NOTES: 1/ These revised values are the result of a more detailed and accurate computation of the data. Some values may be less than actual (within 5%), because pond evaporation during inflow was not considered.

SELECTED RUNOFF EVENTS			McCREIDIE, MISSOURI				STATION RESERVOIR WATERSHED W-1			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF 1/			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of July 3, 1941										
6 -3	2 RG 2/ .01	.0000	7 -3	RG	R-2		7 -3	0330	.0356	.0000
6 -6	.23	.0000		0329	.00	.00		0340	.0377	.0061
6 -8	.61	.0000		0332	2.40	.12		0352	.0698	.0169
6 -9	1.27	.0492		0339	.51	.18		0400	.0965	.0280
6-12	.13	.0000		0353	.00	.18		0410	.124	.0464
6-23	.46	.0000		0405	.60	.30		0419	.195	.0703
6-27	.24	.0000		0410	.12	.31		0426	.263	.0970
6-28	1.03	.0706		0415	1.08	.40		0431	.286	.1199
7 -1	.39	.0000		0422	.77	.49		0436	.342	.1461
7 -2	1.61	.2846		0427	1.44	.61		0441	.510	.1816
7 -3	3/ .64	4/ .1594		0433	3.70	.98		0446	.684	.2314
Watershed conditions: 4%—soybeans, 8-10 in. tall 90%—pasture, poor 6%—roads, farmstead, and plots			0440	2.48	1.27		0450	.784	.2803	
			0445	1.68	1.41		0456	.928	.3660	
			0448	2.60	1.54		0500	.930	.4279	
			0455	.17	1.56		0504	.777	.4848	
			0501	.60	1.62		0508	.686	.5336	
			0513	.95	1.81		0512	.571	.5755	
			0520	.26	1.84		0516	.472	.6102	
			0530	.24	1.88		0520	.432	.6404	
			0630	.02	1.90		0525	.357	.6732	
			0640	.06	1.91		0531	.310	.7066	
			RG	R-4	1.54		0536	.271	.7308	
			2 RG	AVG 2/	1.67		0545	.210	.7669	
Watershed conditions: 4%—soybeans, 6-10 in. tall 90%—pasture, poor 6%—roads, farmstead, and plots							0552	.158	.7883	
							0558	.129	.8026	
							0606	.0843	.8169	
							0616	.0587	.8288	
							0630	.0505	.8415	
							0640	.0358	.8487	
							0652	.0254	.8549	
							0720	.0153	.8644	
							0752	.0053	.8699	
							0830	.0007	.8718	
							0900	.0000	.8720	
Event of June 10-11, 1942										
5-11	2 RG 2/ .05	.0000	6-10	RG	R-4		6-10	1140	.0000	.9000
5-12	.10	.0000		1100	.00	.00		1146	.0210	.0011
5-14	.10	.0000		1145	.03	.02		1153	.0737	.0066
5-15	.77	.0270		1153	.38	.07		1205	.142	.0282
5-17	.59	.0643		1159	1.70	.24		1212	.246	.0508
5-18	.08	.0101		1202	2.60	.37		1219	.444	.0910
5-25	.02	.0000		1208	.80	.45		1228	.643	.1725
5-26	.76	.0390		1213	2.16	.63		1235	.773	.2551
5-30	.06	.0000		1217	3.30	.85		1240	.922	.3257
5-31	.05	.0000		1225	1.05	.99		1245	.883	.4010
6 -7	1.65	.1392		1232	.69	1.07		1254	.643	.5155
6 -9	.36	.0094		1235	1.00	1.12		1300	.419	.5686
6-10	5/ .20	6/ .0071		1250	.40	1.22		1310	.284	.6272
Watershed conditions: 4%—soybeans, 6-10 in. tall 90%—pasture, poor 6%—roads, farmstead, and plots			1300	.12	1.24		1317	.217	.6564	
			1340	.00	1.24		1329	.172	.6953	
			1344	.75	1.29		1345	.117	.7339	
			1445	.00	1.29		1400	.0729	.7577	
			1500	.16	1.33		1412	.0504	.7700	
			1520	.03	1.34		1442	.0345	.7912	
			1535	.08	1.36		1536	.0191	.8154	
			RG	R-2	1.58		1649	.0155	.8365	
							1815	.0125	.8566	
							1900	.0083	.8645	
							2200	.0025	.8808	
							2400	.0015	.8849	
Watershed conditions: 4%—soybeans, 6-10 in. tall 90%—pasture, poor 6%—roads, farmstead, and plots			2 RG	AVG 2/	1.44	6-11	0300	.0005	.8879	
							0800	.0000	.8891	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 155.28. 1/ ALL FLOWS CORRECTED FOR PONDAGE IN 15.2 AC. POND ABOVE 2.5 FT. SQUARE DROP INLET CONTROL AND FOR PRECIPITATION FALLING DIRECTLY ON POND SURFACE. 2/ THIESSEN AVERAGE OF GAGES R-2 AND R-4. 3/ RAINFALL FROM 0059 TO 0235. 4/ RUNOFF FROM 0100 TO 0330. 5/ RAINFALL FROM 0131 TO 0515. 6/ RUNOFF FROM 0159 TO 0341.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 155.28. ^{1/} ALL FLOWS CORRECTED FOR PONDAGE IN 15.2 AC. POND ABOVE 2.5 FT. SQUARE DROP INLET CONTROL AND FOR PRECIPITATION FALLING DIRECTLY ON POND SURFACE. ^{2/} THIESSEN AVERAGE OF GAGES R-2 AND R-4. ^{3/} RAINFALL FROM 0059 TO 0235. ^{4/} RUNOFF FROM 0100 TO 0330. ^{5/} RAINFALL FROM 0131 TO 0515. ^{6/} RUNOFF FROM 0159 TO 0341.

SELECTED RUNOFF EVENTS				McCREDIE, MISSOURI			STATION RESERVOIR WATERSHED W-1			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF <u>1/</u>			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
2 RG <u>2/</u>			Event of May 16--18, 1943							
4-19	.01	.0000	5-16	RG	R-4		5-16	2240	.0130	.0000
4-22	.65	.0000		2225	.00	.00		2258	.0214	.0051
4-25	.44	.0000		2235	.12	.02		2328	.0267	.0171
5 -6	1.25	.0787		2248	.23	.07		2400	.0407	.0346
5 -7	1.84	.9896		2257	.67	.17	5-17	0031	.0357	.0550
5 -8	.56	.8024	5-17	2310	.28	.23		0115	.0503	.0865
5-10	.57	.3134		2330	.09	.26		0136	.104	.1136
5-11	.96	.9657		0105	.00	.26		0154	.135	.1475
5-14	.02	.0000		0110	1.44	.38		0209	.105	.1777
5-15	.80	.2905		0115	.72	.44		0215	.184	.1922
5-16	.00	<u>3/</u> .0930		0125	.30	.49		0233	.351	.2770
Watershed conditions: 16%--being prepared for soybeans 78%--pasture, poor 6%--roads, farmstead, and plots				0143	.00	.49		0242	.414	.3344
				0150	.17	.51		0252	.334	.3969
				0208	.00	.51		0309	.209	.4695
				0215	3.43	.91		0322	.136	.5099
				0338	.00	.91		0340	.0923	.5443
				0355	.56	1.07		0357	.112	.5734
				0415	.24	1.15		0418	.155	.6204
				0440	.02	1.16		0448	.148	.6939
				0530	.01	1.17		0515	.0992	.7498
							0545	.08	1.19		0600	.0717	.8143
			0610	.14	1.25		0639	.0558	.8560	
			0700	.02	1.27		0725	.0383	.8931	
			0813	.04	1.32		0809	.0524	.9258	
			0830	.21	1.38		0857	.0875	.9821	
			0845	.12	1.41		0922	.0981	1.0226	
			0930	.14	1.52		0958	.0811	1.0768	
			1015	.00	1.52		1058	.0779	1.1569	
			1100	.14	1.63		1158	.0897	1.2414	
			1120	.06	1.65		1239	.0903	1.3034	
			1200	.12	1.73		1306	.0800	1.3406	
			1215	.16	1.77		1340	.0957	1.3923	
			1238	.03	1.78		1421	.115	1.4647	
			1258	.12	1.82		1515	.111	1.5651	
			1328	.08	1.86		1531	.108	1.5964	
			1345	.21	1.92		1542	.148	1.6200	
			1403	.30	2.01		1603	.222	1.6818	
			1440	.02	2.02		1612	.270	1.7187	
			1445	.36	2.05		1627	.274	1.7914	
			1455	.12	2.07		1639	.374	1.8509	
			1513	.03	2.08		1652	.445	1.9467	
			1527	.47	2.19		1707	.347	2.0459	
			1540	.46	2.29		1721	.232	2.1136	
			1548	.08	2.30		1728	.181	2.1377	
			1602	.43	2.40		1739	.199	2.1695	
			1606	1.20	2.48		1803	.165	2.2456	
			1618	.10	2.50		1821	.105	2.2839	
			1630	.30	2.56		1855	.0639	2.3336	
			1635	2.40	2.76		1936	.0510	2.3733	
			1725	.04	2.79		2021	.0285	2.4035	
			1730	.96	2.87		2103	.0323	2.4250	
			1845	.03	2.91		2127	.0347	2.4386	
			2050	.00	2.91		2152	.136	2.4743	
			2105	.04	2.92		2206	.464	2.5444	
			2120	.08	2.94		2218	.700	2.6512	
			2125	.60	2.99		2227	.579	2.7472	
			2135	.18	3.02		2239	.431	2.8566	
			2148	.28	3.08		2254	.382	2.9516	
			2153	2.52	3.29		2310	.294	3.0476	
			2200	2.31	3.56		2400	.217	3.2569	
			2230	.16	3.64	5-18	0021	.131	3.3209	
			2300	.04	3.76		0112	.0732	3.4068	
			2325	.26	3.87		0151	.0446	3.4466	
			2340	.20	3.92		0230	.0433	3.4755	
			2400	.06	3.94		0301	.0398	3.4972	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 155.28. <u>1/</u> FLOWS CORRECTED FOR PONDAGE. <u>2/</u> THIESSEN WEIGHTED AVERAGE OF GAGES R-2 AND R-4. <u>3/</u> RUNOFF FROM 0000 TO 2240.										

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 155.28. ^{1/} FLOWS CORRECTED FOR PONDAGE. ^{2/} THIESSEN WEIGHTED AVERAGE OF GAGES R-2 AND R-4. ^{3/} RUNOFF FROM 0000 TO 2240.

SELECTED RUNOFF EVENTS			McCREIDIE, MISSOURI				STATION RESERVOIR WATERSHED W-1			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF 1/			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
<u>Event of May 16-18, 1943-Continued</u>										
			5-18	0030	.00	3.94	5-18	0342	.0268	3.5202
				0045	.08	3.96		0442	.0212	3.5445
				0210	.00	3.96		0537	.0159	3.5618
				0300	.02	3.98		0630	.0062	3.5716
								0736	.0026	3.5765
			RG	R-2		3.79		0903	.0000	3.5789
			2 RG	AVG 2/		3.91				
<u>Event of June 8, 1943</u>										
	2 RG 2/		6 -8	RG	R-4		6 -8	0610	.0000	.0000
5-10	.57	.3134		0607	.00	.00		0615	.0078	.0009
5-11	.96	.9457		0616	.27	.04		0632	.0110	.0036
5-14	.02	.0000		0627	.11	.06		0646	.0151	.0066
5-15	.80	.2905		0632	1.20	.16		0705	.0741	.0207
5-16	.26	.1276								
5-17	3.61	3.2223		0638	.30	.19		0710	.225	.0332
5-18	.08	.3401		0652	.04	.20		0722	.387	.0944
5-19	.75	.6500		0701	.60	.31		0727	.471	.1302
5-20	.31	.1671		0709	1.65	.53		0733	.568	.1821
5-23	.06	.0000*		0715	1.00	.63		0741	.665	.2643
5-24	.25	.0000		0721	1.20	.75		0746	.635	.3185
5-26	.02	.0000		0732	.22	.79		0755	.557	.4079
5-30	.57	.0247		0740	.75	.89		0809	.410	.5208
5-31	.09	.0000		0800	.24	.97		0825	.276	.6124
6 -3	1.18	.2441		0930	.08	1.09		0848	.224	.7084
6 -4	.80	.5797						0902	.170	.7545
6 -5	1.25	1.1317						0922	.124	.8035
6 -6	.26	.1144		RG	R-2	1.13		0941	.0865	.8368
Watershed conditions:			2 RG	AVG 2/		1.10		1003	.0674	.8650
16%—soybeans, 0-4 in.								1024	.0521	.8859
tall										
78%—pasture, poor								1048	.0390	.9042
6%—roads, farmstead,								1143	.0256	.9339
and plots								1230	.0000	.9439
<u>Event of May 14-15, 1945</u>										
	2 RG 2/		5-14	RG	R-4		5-14	2328	.0520	.0000
4-14	.17	.0834		2323	.00	.00		2335	.125	.0103
4-15	.29	.2592		2328	1.80	.15		2348	.158	.0409
4-16	.32	.2134		2334	1.50	.30		2400	.184	.0751
4-19	.02	.0000		2345	.16	.33	5-15	0010	.193	.1065
4-24	.56	.0262								
4-25	.34	.0371		2350	.72	.39		0020	.218	.1407
4-27	.29	.0136		2355	.84	.46		0030	.263	.1808
4-28	.33	.2338	5-15	0005	.12	.48		0040	.420	.2377
4-29	.00	.0031		0020	.04	.49		0050	.787	.3384
5 -1	.24	.0000		0025	2.52	.70		0100	.822	.4725
5 -3	.04	.0000		0030	2.04	.87		0110	.468	.5801
5 -6	.26	.0000		0037	1.37	1.03		0120	.340	.6474
5 -7	.14	.0000		0047	.60	1.13		0130	.306	.7012
5 -9	.03	.0000		0055	.08	1.14		0140	.211	.7444
5-14	3/ .73	4/ .0614		0103	.30	1.18		0150	.150	.7745
Watershed conditions:				0115	.05	1.19		0200	.107	.7959
4%—being prepared for								0210	.0945	.8127
soybeans								0220	.0843	.8276
90%—pasture, poor								0240	.0586	.8514
6%—roads, farmstead,								0300	.0380	.8675
and plots				RG	R-2	1.12		0400	.0207	.8969
			2 RG	AVG 2/		1.16		0459	.0062	.9102
								0559	.0043	.9154
								0706	.0041	.9201
								0814	.0040	.9247
								0934	.0000	.9260

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 155.28. 1/ FLOWS CORRECTED FOR PONDAGE. 2/ THIESSEN WEIGHTED AVERAGE OF GAGES R-2 AND R-4. 3/ RAINFALL FROM 1800 TO 2115. 4/ RUNOFF FROM 1801 TO 2328.

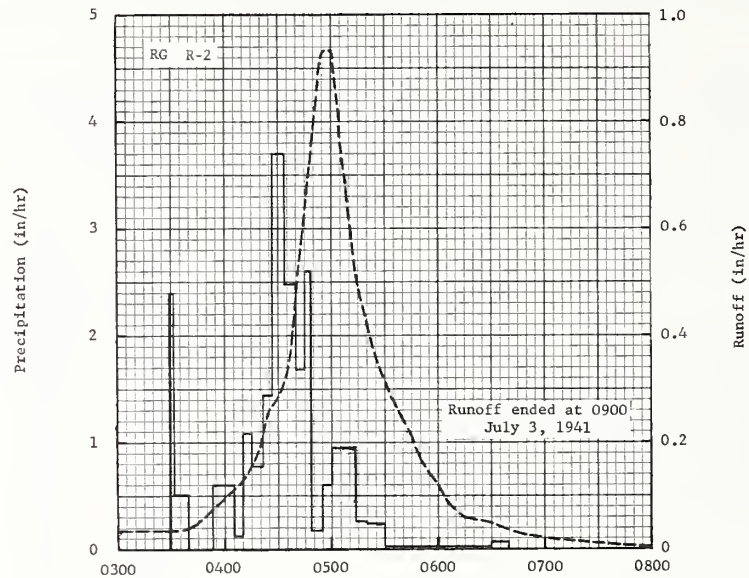
SELECTED RUNOFF EVENTS						McCREDIE, MISSOURI		STATION RESERVOIR WATERSHED W-1			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF 1/				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of May 1-2, 1948											
4-11	2 RG 2/ .22	.0000	5 -1	RG	R-4		5 -1	2138	.0000	.0000	
4-12	.35	.0000		2137	.00	.00		2200	.0013	.0002	
4-22	.08	.0000		2200	.13	.05		2211	.0164	.0018	
4-25	.21	.0000		2207	.51	.11		2220	.0911	.0099	
4-26	.07	.0000		2212	2.40	.31		2230	.131	.0284	
				2216	3.15	.52		2240	.141	.0510	
				2221	2.40	.72		2250	.182	.0779	
				2225	9.30	1.34		2300	.197	.1096	
				2230	3.24	1.61		2310	.145	.1381	
				2245	.36	1.70		2320	.0823	.1570	
Watershed conditions: 24%--being prepared for corn and soybeans 25%--pasture, fair 45%--meadow 6%--roads, farmstead, and plots			2300	.16	1.74	2330	.0598	.1689			
			2315	.12	1.77	2340	.0403	.1772			
			2335	.03	1.78	2350	.0366	.1836			
			RG	R-2	1.74	5 -2	2400	.0294	.1892		
							0033	.0145	.2013		
							0116	.0059	.2086		
							0200	.0031	.2119		
							0302	.0017	.2144		
							0441	.0011	.2167		
							0800	.0010	.2200		
			2 RG	AVG 2/	1.77		1004	.0000	.2209		
Event of July 22, 1948											
6-22	2 RG 2/ 1.96	.9276	7-22	RG	R-4		7-22	0210	.0127	.0000	
6-23	.00	.0242		0204	.00	.00		0220	.0220	.0029	
6-25	.40	.0000		0207	2.00	.10		0230	.0604	.0097	
6-26	.21	.0000		0220	.05	.11		0240	.114	.0242	
6-27	.11	.0000		0224	.60	.15		0250	.155	.0466	
				0227	2.60	.28		0300	.242	.0798	
6-28	.36	.0000		0232	.72	.34		0310	.338	.1282	
6-29	.03	.0000		0237	3.00	.59		0320	.378	.1879	
7 -4	1.31	.3301		0245	1.13	.74		0330	.395	.2524	
7 -5	.12	.0440		0256	1.20	.96		0340	.334	.3131	
7 -6	.00	.0044									
7-10	.74	.0933		0301	.60	1.01	0350	.262	.3628		
7-11	.00	.0071		0320	.09	1.04	0400	.214	.4024		
7-14	.18	.0000		0350	.04	1.06	0410	.178	.4351		
7-15	.08	.0000		0402	.15	1.09	0420	.150	.4624		
7-16	.09	.0000		0510	.03	1.12	0430	.122	.4851		
7-19	1.00	.1686		0545	.17	1.22	0445	.104	.5132		
7-20	.13	.0154		0600	.08	1.24	0512	.0771	.5539		
7-21	.27	.0671					0520	.0720	.5638		
7-22	.00	3/ .0110					0548	.0570	.5939		
			RG	R-2	1.20		0625	.0440	.6208		
Watershed conditions: 10%--corn, 3-4 ft. tall 14%--soybeans, 16-20 in. tall 25%--pasture, fair 45%--meadow 6%--roads, farmstead, and plots			2 RG	AVG 2/	1.23		0638	.0390	.6298		
							0700	.0312	.6412		
							0807	.0221	.6709		
							0902	.0141	.6876		
							0937	.0137	.6957		
							1058	.0085	.7107		
							1255	.0057	.7246		
							1501	.0055	.7364		
							1658	.0029	.7448		
							1858	.0016	.7494		
							2057	.0000	.7511		
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 155.28. 1/ CORRECTED FOR PONDAGE. 2/ THIESSEN WEIGHTED AVERAGE OF GAGES R-2 AND R-4. 3/ RUNOFF FROM 0000 TO 0210.											

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 155.28. ^{1/} CORRECTED FOR PONDAGE. ^{2/} THIESSEN WEIGHTED AVERAGE OF GAGES R-2 AND R-4. ^{3/} RUNOFF FROM 0000 TO 0210.

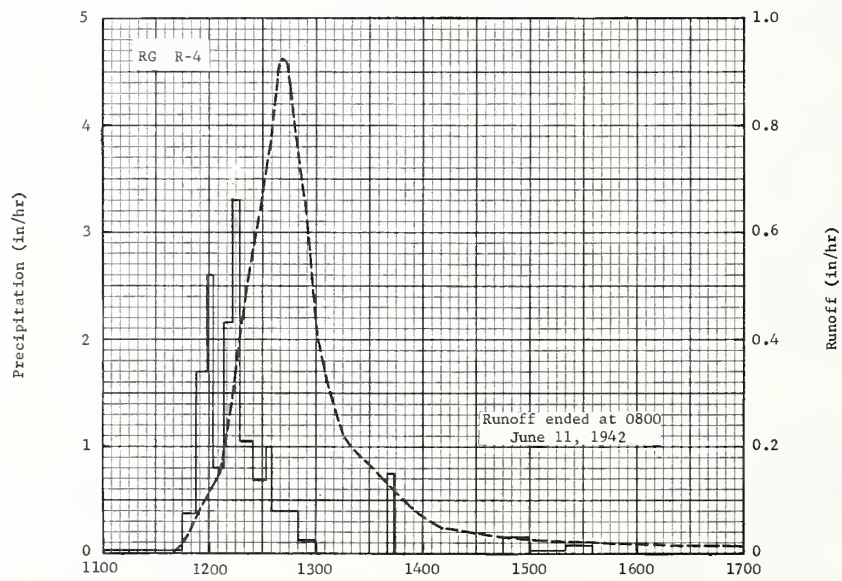
SELECTED RUNOFF EVENTS			McCREIDIE, MISSOURI				STATION RESERVOIR WATERSHED W-1			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF <u>1/</u>			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 12-13, 1949										
8-14	2 RG <u>2/</u> .15	.0000	9-12	RG	R-4		9-12	1947	.0215	.0000
8-19	3.81	.6563		1947	.00	.00	1952	.0596	.0033	
8-20	.00	.0261		1955	.90	.12	2000	.125	.0157	
8-27	.36	.0000		2000	2.04	.29	2010	.169	.0402	
8-28	.16	.0000		2005	5.16	.72	2020	.290	.0786	
9 -6	.07	.0000		2010	2.76	.95	2030	.491	.1437	
9 -7	.37	.0000		2020	.48	1.03	2040	.548	.2303	
9-11	1.15	.0000		2030	.36	1.09	2050	.445	.3131	
9-12	<u>3/</u> 1.60	<u>4/</u> .3155					2100	.378	.3817	
							2110	.308	.4389	
Watershed conditions: 9%—corn, near maturity 15%—soybeans, near maturity 25%—pasture, fair 45%—meadow 6%—roads, farmstead, and plots										
				RG	R-2	1.14		2120	.235	.4842
								2130	.198	.5202
				2 RG	AVG <u>2/</u>	1.11		2140	.169	.5509
								2150	.155	.5779
								2200	.133	.6019
								2220	.0994	.6407
								2240	.0841	.6713
								2300	.0729	.6974
								2320	.0620	.7199
								2340	.0510	.7387
							9-13	2400	.0400	.7539
								0016	.0330	.7636
								0042	.0269	.7766
								0117	.0170	.7894
								0147	.0100	.7962
								0217	.0070	.8005
								0258	.0042	.8043
								0343	.0030	.8070
								0453	.0020	.8099
								0607	.0010	.8117
								0733	.0000	.8124
Event of June 29-30, 1957										
5-30	2 RG <u>2/</u> .04	.0000	6-29	RG	R-4		6-29	2310	.149	.0000
5-31	.07	.0000		2300	.00	.00	2320	.173	.0269	
6 -1	.15	.0000		2318	.07	.02	2330	.329	.0688	
6 -4	.16	.0000		2325	1.55	.20	2340	.643	.1498	
6 -7	.57	.0000		2330	3.00	.45	2350	.998	.2865	
6 -8	.44	.0000		2333	6.20	.76	6-30	2400	1.04	.4567
6-10	.07	.0000		2335	3.30	.87		0008	.827	.5813
6-12	.10	.0000		2343	2.40	1.19		0015	.674	.6690
6-14	.08	.0000		2348	.36	1.22		0022	.465	.7354
6-22	.11	.0000		2400	.05	1.23		0032	.307	.7997
6-23	.05	.0000	6-30	0030	.02	1.24		0040	.226	.8353
6-26	.32	.0000		0036	.30	1.27		0052	.175	.8754
6-27	.02	.0000		0042	.70	1.34		0108	.148	.9184
6-28	.07	.0000		0105	.03	1.35		0117	.145	.9404
6-29	<u>5/</u> 2.79	<u>6/</u> .4611		0110	.96	1.43		0128	.139	.9664
				0115	.72	1.49	0200	.117	1.0348	
				0138	.03	1.50	0220	.0883	1.0691	
				0145	.43	1.55	0240	.0677	1.0951	
							0300	.0543	1.1154	
							0320	.0357	1.1305	
Watershed conditions: 30%—corn, 1-2 ft. tall 25%—pasture, good 39%—meadow 6%—roads, farmstead, and plots										
				RG	R-2	1.33		0342	.0227	1.1412
								0358	.0223	1.1472
				2 RG	AVG <u>2/</u>	1.47		0430	.0180	1.1580
								0456	.0179	1.1658
								0516	.0151	1.1713
								0539	.0149	1.1771
								0556	.0129	1.1810
								0616	.0085	1.1846
								0638	.0032	1.1868
								0657	.0024	1.1877
								0718	.0000	1.1881

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 155.28. 1/ CORRECTED FOR PONDAGE. 2/ THIESSEN WEIGHTED OF GAGES R-2 AND R-4. 3/ RAINFALL FROM 1310 TO 1715. 4/ RUNOFF FROM 1357 TO 1947. 5/ 2.08 IN. FROM 1530 TO 2000; 0.71 IN. FROM 2130 TO 2300. 6/ RUNOFF FROM 1900 TO 2310.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 155.28. 1/ CORRECTED FOR PONDAGE. 2/ THIESSEN WEIGHTED OF GAGES R-2 AND R-4. 3/ RAINFALL FROM 1310 TO 1715. 4/ RUNOFF FROM 1357 TO 1947. 5/ 2.08 IN. FROM 1530 TO 2000; 0.71 IN. FROM 2130 TO 2300. 6/ RUNOFF FROM 1900 TO 2310.

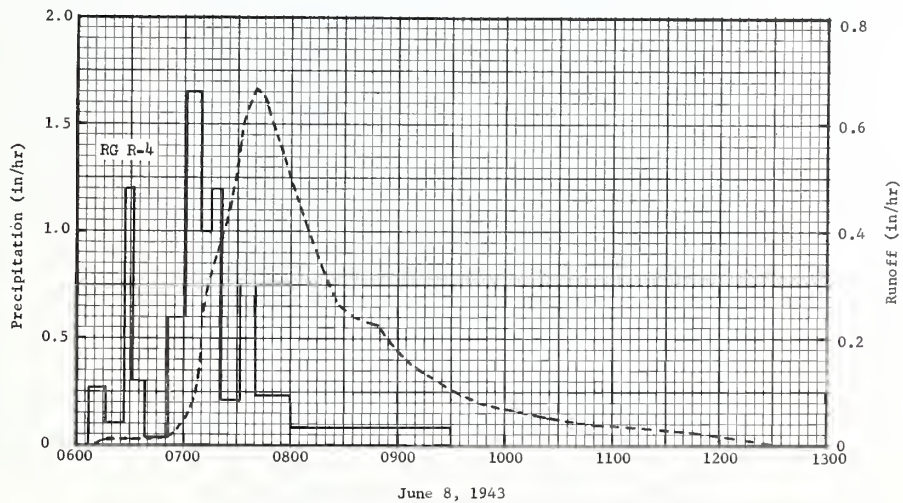
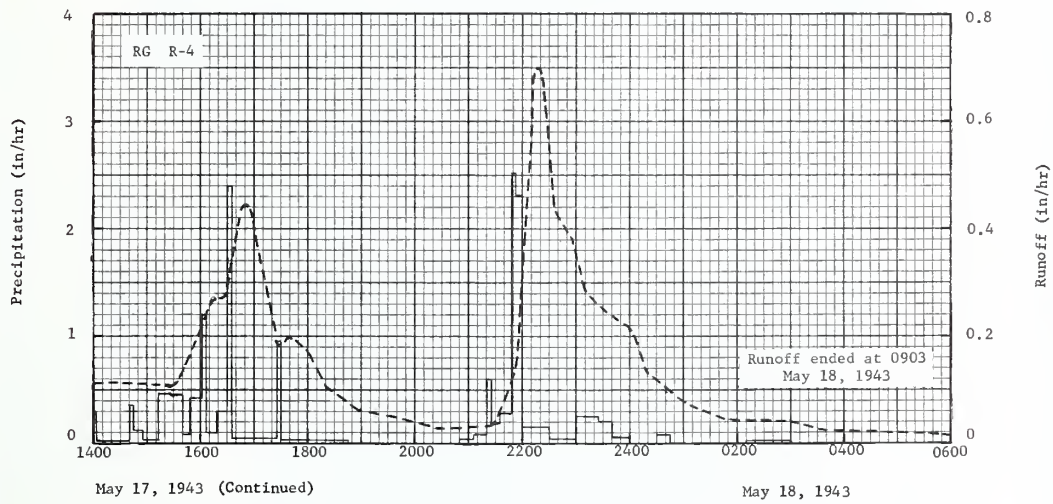
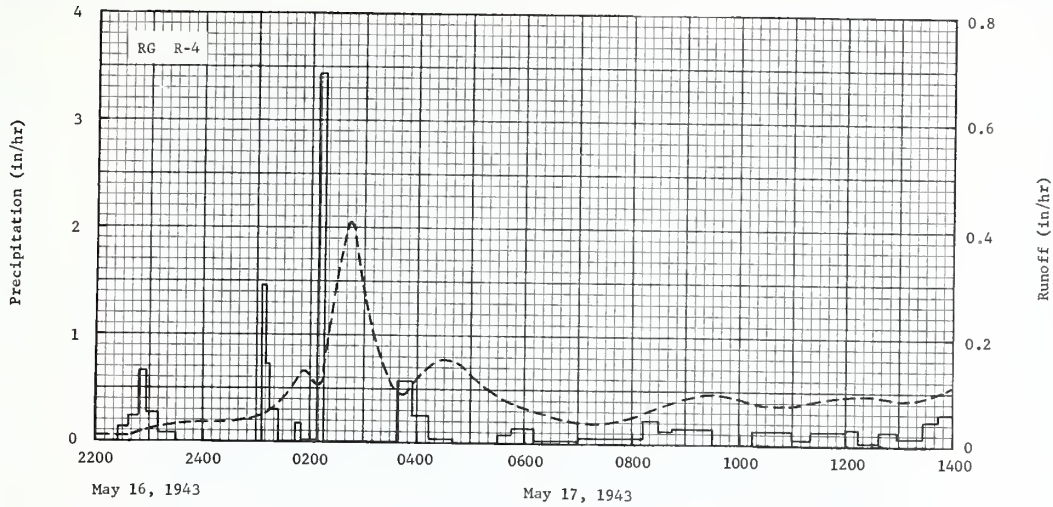


July 3, 1941

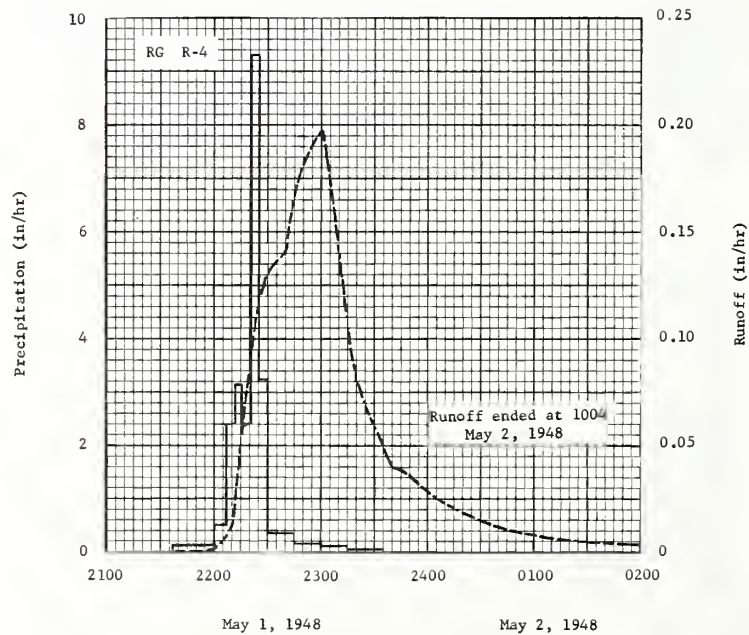
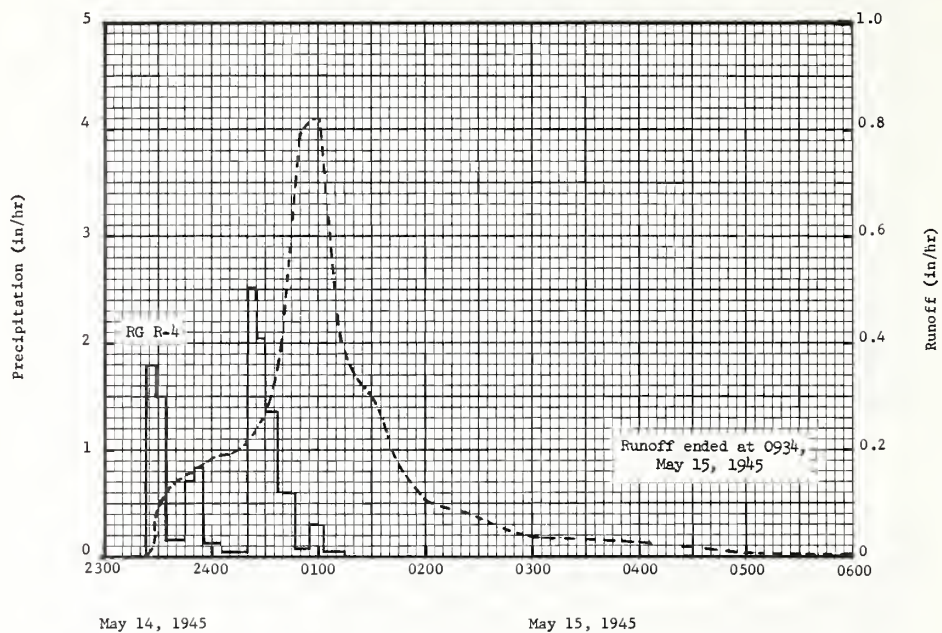


June 10, 1942

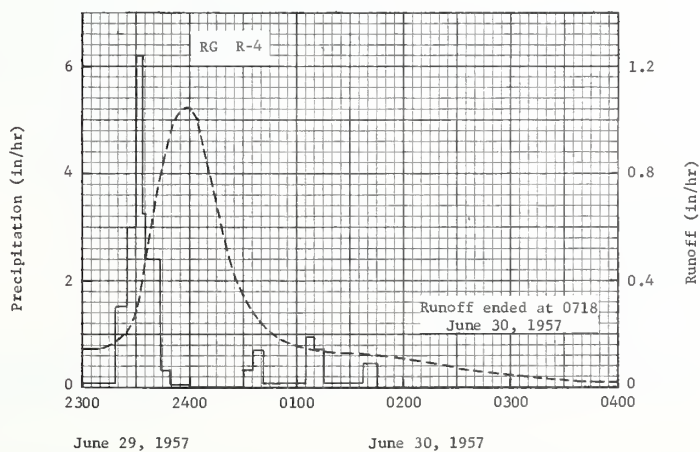
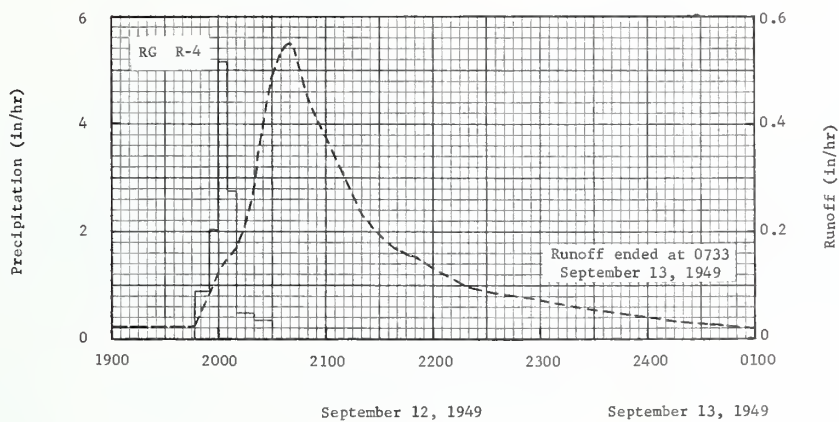
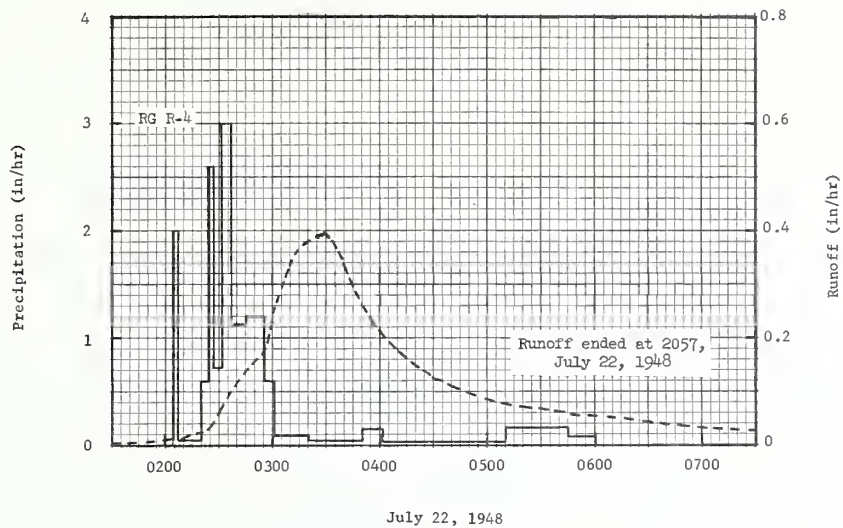
McCREDIE, MISSOURI STATION RESERVOIR WATERSHED W-1



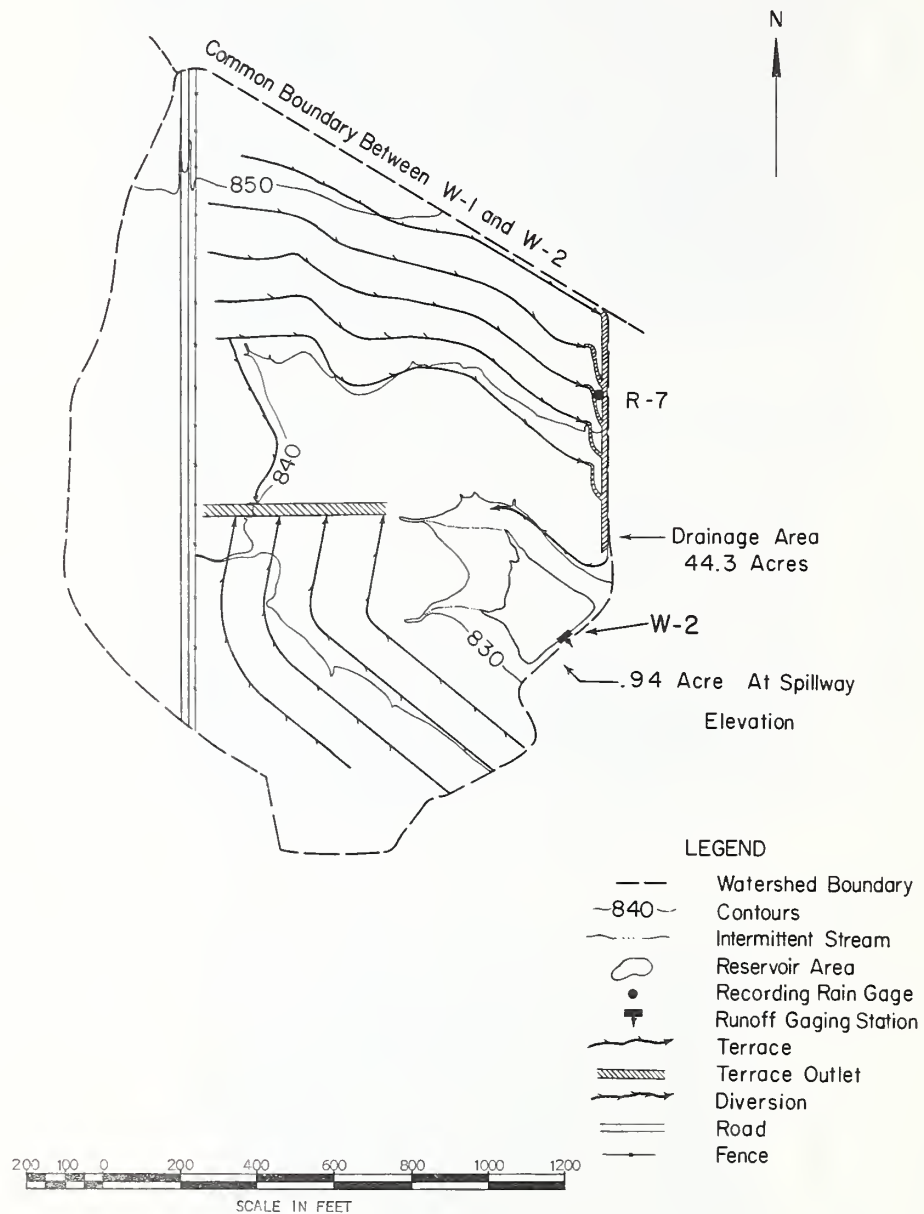
McCREIDIE, MISSOURI STATION RESERVOIR WATERSHED W-1



McCREDIE, MISSOURI STATION RESERVOIR WATERSHED W-1



McCREDIE, MISSOURI STATION RESERVOIR WATERSHED W-1



MC CREDIE, MISSOURI
REVISED TOPOGRAPHIC MAP
OF
STATION RESERVOIR
WATERSHED W-2

McCREIDIE, MISSOURI S. W. POND NO. 2 WATERSHED

LOCATION: Callaway County, Mo.; 1 mile southeast of McCredie; Crows Fork Creek, Auxvasse Creek, Missouri River Basin.

AREA: 44.3 acres.

SLOPES: (Revision)

Slope—Percent	0-2	2-5
Percent of area	19	81

SOILS: (Revision) The soils of this area developed in loess and loess-like glacial material. The Mexico series consists of moderately dark colored, imperfectly drained, planosolic soils integrating to the grey-brown podzolics. They have silt loam A horizons, silty clay loam B1 horizons, and heavy silty clay B2 horizons.

Type	Percent of area	Topsoil		Subsoil		Substratum		Internal drainage
		Average depth (in.)	Structure	Permeability	Structure	Permeability	Average depth to (in.)	
Mexico silt loam	100	7	Weak fine to medium granular	Moderately rapid	Moderate very fine to fine angular blocky	Slow	36	Slow

EROSION: (Revision)

Erosion Class	I	II	III
Percent of Area	35	55	10

LAND CAPABILITY:

Class	I	II	III	IV
Percent of area	0	0	99	1

GEOLOGY: Bedrocks present are of the Pennsylvanian Age and have surficial deposits of glacial till. The Desmoinesian series represents the Pennsylvanian strata. This series is extensively distributed and crops out in a broad, continuous band across western and northern Missouri from which it dips in a northwesterly direction. The watershed is near the southern edge of the outcrop. Either of two similar groups within the Desmoinesian series, the Cherokee or Marmaton, may be present. These are made up of sandstone, siltstone, shale, limestone, underclay, and coal beds. The surficial deposit over the bedrock is glacial till deposited by either the Nebraskan or Kansan glacier. This has a probable depth of 25-40 ft. The till generally consists of an unleached and unoxidized layer (blue clay), grading upward into unleached and oxidized calcareous till (yellow clay), grading upward into a leached and oxidized layer lacking limestone, and grading upward into gumbotil which may range from 5-15 ft. thick. The gumbotil has been overlaid with a loess cap now 2-6 ft. deep, of probable Wisconsinian Age. Water percolation through the glacial till is extremely slow. As a result, ground water accretion and discharge are very slow. There are no significant water bearing formations within 200 ft. of the surface. Source of data: The Stratigraphic Succession in Missouri by Howe and Koenig, 1961; Geology and Soils Manual, State Highway Department of Missouri, 1962.

SURFACE DRAINAGE: (Revision) Good; 10 terraces, total length 9000 ft. graded approximately 4 in. per 100 ft.; 75 percent of watershed above terraces; length of principal waterway 2200 ft.; common boundary with Watershed 1 for 1240 ft. along the northeast border.

CHARACTER OF FLOW: Ephemeral; continuous.

INSTRUMENTATION: (Revision) Runoff: FW-1 recorder on a 0.94-acre pond with outlets being a 12-inch tube and an emergency spillway. Precipitation: one recording rain gage.

WATERSHED CONDITIONS: (Revision)

Year	Percent of Watershed in:				
	Pasture ^{1/}	Meadow	Row crops ^{2/}	Small grain	Roads
1951	14	53	30	3	
1952	14	35	31	17	3
1953	14	41	31	11	3
1954	14	41	11	31	3
1955-56	14	28	55		3
1957	14	22	61		3
1958	14	41	42		3
1959	14	41	20	22	3
1960-63	14	63	20		3

^{1/} Pasture condition poor for entire period.

^{2/} Crops of corn and soybeans.

GENERALLY REPRESENTS: (Revision) Mixed-cover on the gently rolling or undulating claypan prairie, breaking into timbered glacial soils on the rolling slopes common to the old Central Claypan Area problem area C8, now revised to Central Claypan Areas land resource area (M-113) of northeast Missouri and south central Illinois.

RE-EVALUATION OF PREVIOUSLY PUBLISHED MONTHLY PRECIPITATION AND RUNOFF (inches) 1/						McCREIDIE, MISSOURI S. W. POND NO. 2 WATERSHED							
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1951 P	1.50	4.23	3.76	1.97	2.81	6.46	2.33	4.29	5.74	3.68	1.60	1.74	40.11
Q	.00	.97	1.73	.49	.04	.31	.04	.01	.60	.72	.68	.65	6.24
1952 P	1.11	1.22	3.30	2.64	2.23	3.42	2.45	4.79	1.27	.22	4.07	1.41	28.13
Q	.70	.65	1.87	1.24	.00	.04	.00	.03	.01	.00	.15	.03	4.72
1953 P	1.42	.97	3.61	2.99	3.86	3.56	2.00	2.13	2.40	2.81	.59	.72	27.06
Q	.11	.03	.96	.42	.83	.04	.05	.01	.00	.00	.00	.00	2.45
1954 P	.66	.74	1.84	3.51	3.49	2.37	.18	5.25	1.85	4.61	1.11	1.62	27.23
Q	.00	.00	.00	.03	.02	.00	.00	.00	.00	.10E	.01	.01	.17
1955 P	1.97	3.01	1.24	2.95	3.01	4.83	2.87	2.75	3.93	4.44	.63	.17	31.80
Q	.77	.98	.15	.36	.04	.26	.10	.01	.01	.25	.01	.00	2.94
1956 P	.38	1.16	.37	2.49	4.42	1.65	9.06	.77	.70	1.16	1.60	2.81	28.57
Q	.00	.01	.00	.02	.04	.00	1.52	.01	.00	.00	.02	.01	1.63
1957 P	1.33	2.14	2.74	5.56	4.29	6.31	2.66	.40	1.21	2.74	1.90	2.79	34.07
Q	.01	.39	.31	1.77	.44	1.55	.00	.00	.00	.00	.00	.00	4.47
1958 P	1.21	1.09	3.02	2.60	3.32	5.34	8.97	2.86	3.02	2.07	2.92	.38	36.80
Q	.00	.21	1.52	.43	.29	.54	2.12	.37	.01	.05	.42	.00	5.96
1959 P	1.53	2.72	2.18	2.45	5.21	.03	3.37	2.14	4.57	5.91	.57	1.91	32.59
Q	.20E	2.53	.68	.19	.51	.00	.00	.01	.29	2.55	.00	.08	7.04
1960 P	1.18	1.35	1.64	4.20	2.93	3.50	3.72	1.23	.75	4.01	1.28	2.03	27.82
Q	.06	.54	2.78	1.07	.47	.03	.30	.00	.00	.01	.00	.02	5.28
1961 P	.15	1.78	3.98	4.56	5.07	5.44	5.38	1.78	6.25	2.07	2.99	1.40	40.85
Q	.00	.11	1.34	1.88	2.72	.39	.71	.06	.35	.00	.72	.60	8.88
1962 P	1.27	2.19	2.72	1.37	2.33	1.41	3.16	1.81	4.14	2.52	.62	1.14	24.68
Q	.87	1.52	2.14	.00	.00	.00	.00	.00	.00	.01	.00	.00	4.54
1963 P	.42	.10	3.41	2.63	4.17	1.36	3.71	4.19	1.81	1.59	1.61	.34	25.34
Q	.00	.00	.14	.01	.01	.00	.00	.00	.00	2/ .00			
STA AV P (51-63) Q2/	1.09 .21	1.75 .61	2.60 1.05	3.07 .61	3.63 .42	3.51 .24	3.84 .37	2.80 .04	2.90 .10	2.91 .31	1.65 .17	1.42 .12	31.17 4.25
MEAN P 4/ 74 YR	1.84	1.80	2.91	3.66	4.71	4.62	3.52	3.75	4.30	2.89	2.18	1.80	37.98

RE-EVALUATION OF PREVIOUSLY PUBLISHED
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS 1/

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1951	3-17	.47	3-17	.41	3-17	.66	3-17	.94	3-16	1.03	3-16	1.08	3-15	1.16	3-10	1.52
1952	3-31	.28	3-31	.25	3-31	.41	3-31	.56	3-31	.59	3-31	.61	3-18	.62	3-31	1.08
1953	5-22	.19	5-22	.14	5-22	.23	5-4	.32	5-4	.39	5-4	.42	5-4	.43	3-3	.62
1954	4-6	.02	4-6	.01	4-6	.01	5-1	.01	5-1	.01	5-1	.01	5-1	.01	5-1	.01
1955	4-23	.14	1-5	.11	1-4	.19	1-4	.31	1-4	.34	2-18	.64	2-18	.69	2-18	.89
1956	7-3	.56	7-3	.35	7-3	.43	7-15	.59	7-15	.69	7-15	.69	7-15	.69	7-13	.76
1957	6-29	1.43	6-29	.60	6-29	.80	6-29	1.28	6-29	1.50	6-29	1.51	6-28	1.51	6-22	1.51
1958	6-14	.20	6-14	.16	7-19	.26	7-31	.43	7-19	.55	7-19	.63	7-30	.83	7-15	1.16
1959	10-10	.91	10-10	.47	10-10	.65	2-9	.92	2-9	1.77	2-9	2.12	2-9	2.22	2-7	2.49
1960	3-27	1.02	3-27	.55	3-27	.95	3-27	1.73	3-27	1.91	3-27	2.14	3-26	2.42	3-26	2.84
1961	5-5	.39	5-5	.31	5-5	.56	5-5	1.04	5-5	1.27	5-5	1.37	5-4	1.41	5-4	2.54
1962	3-20	.26	3-20	.24	3-20	.46	3-20	1.08	3-20	1.68	3-20	1.94	3-20	1.98	3-20	1.98
1963	3-4	.02	3-4	.01	3-8	.02	3-8	.04	3-8	.05	3-8	.06	3-8	.06	3-4	.13
MAXIMUMS FOR PERIOD OF RECORD 1/																
1951 TO 1963	6-29 1957	1.43	6-29 1957	.60	3-27 1960	.95	3-27 1960	1.73	3-27 1960	1.91	3-27 1960	2.14	3-26 1960	2.42	3-26 1960	2.84

NOTES: 1/ These revised values are the result of a more detailed and accurate computation of the data. Some values may be less than actual (within 5%), because pond evaporation during inflow was not considered. Precipitation from rain gage R-7. 2/ Station closed Oct. 17, 1963. 3/ Oct., Nov., and Dec. 1963 values not available for average Q. 4/ Mean P based on 74-yr (1890-1963) U.S. Weather Bureau record period at Columbia, Mo.

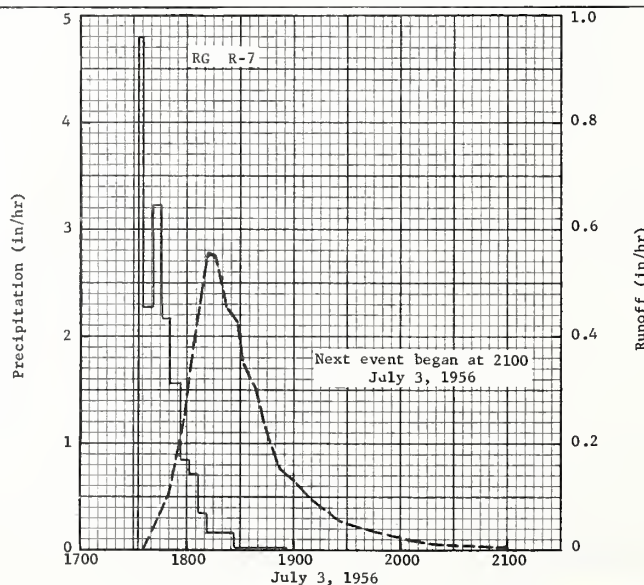
SELECTED RUNOFF EVENTS						McCREIDIE, MISSOURI S. W. POND NO. 2 WATERSHED				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF ^{1/}			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
<u>Event of July 3, 1956</u>										
	RC R-7			RC	R-7		7 -3	1735	.0000	.000
6 -7	.44	.0000	7 -3	1733	.00	.00		1750	.103	.013
6-15	.16	.0000		1736	4.80	.24		1758	.243	.036
6-16	.41	.0000		1741	2.28	.43		1804	.378	.067
6-20	.10	.0000		1746	3.24	.70		1812	.556	.129
6-22	.08	.0000		1751	2.16	.88		1816	.548	.166
6-24	.21	.0000		1756	1.56	1.01		1822	.455	.216
6-26	.22	.0000		1801	.84	1.08		1828	.426	.260
6-27	.03	.0000		1806	.72	1.14		1832	.346	.286
7 -2	1.72	.0224		1811	.36	1.17		1839	.297	.324
7 -3	<u>2/</u> .52	<u>3/</u> .0069		1826	.16	1.21		1844	.230	.346
Watershed conditions: 55%—soybeans, 8-12 in. tall 14%—pasture, poor 28%—meadow 3%—roads				1856	.02	1.22		1852	.154	.371
								1900	.132	.390
								1910	.0967	.409
								1920	.0720	.423
								1930	.0501	.433
								2000	.0208	.451
								2030	.0085	.458
								2100	<u>4/</u> .0048	.462
<u>Event of June 14-15, 1958</u>										
	RC R-7			RG	R-7		6-14	2300	.0121	.000
5-17	.02	.0000	6-14	2300	.00	.00		2306	.0326	.002
5-21	.05	.0000		2304	1.65	.11		2312	.0425	.006
5-22	.20	.0000		2314	.54	.20		2320	.0890	.015
5-24	.26	.0000		2319	2.28	.39		2324	.148	.023
5-27	.15	.0000		2324	2.52	.60		2330	.179	.039
5-30	.15	.0000		2354	.16	.68		2342	.204	.077
5-31	.83	.0067	6-15	0015	.11	.72		2348	.196	.097
6 -1	.02	.0000						2354	.193	.117
6 -5	.05	.0000						2400	.169	.135
6-10	.01	.0000					6-15	0010	.145	.161
6-12	1.24	.0329						0020	.123	.183
6-13	.20	.0000						0030	.0849	.201
6-14	<u>5/</u> 1.44	<u>6/</u> .1703						0050	.0498	.223
Watershed conditions: 42%—corn, 8-12 in. tall 14%—pasture, poor 41%—meadow 3%—roads								0100	.0354	.230
								0120	.0271	.241
								0140	.0227	.249
								0210	.0134	.258
								0240	.0110	.264
								0310	.0090	.269
								0330	.0071	.272
								0357	.0050	.275
								0518	.0028	.280
								0603	.0027	.282
								0755	.0026	.287
								1047	.0013	.292
								1514	.0003	.296
								1931	.0000	.296

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 44.669. ^{1/} ALL FLOWS CORRECTED FOR PONDAGE IN 0.94-AC. POND ABOVE 12 IN. DIA. DROP INLET AND EMERGENCY SPILLWAY CONTROLS. ^{2/} RAINFALL FROM 0001 TO 0900. ^{3/} RUNOFF FROM 0001 TO 1100. ^{4/} BEGINNING OF NEXT RUNOFF EVENT. ^{5/} 0.15 IN. FROM 0300 TO 0530; 1.29 IN. FROM 1100 TO 2100. ^{6/} RUNOFF FROM 1100 TO 2300.

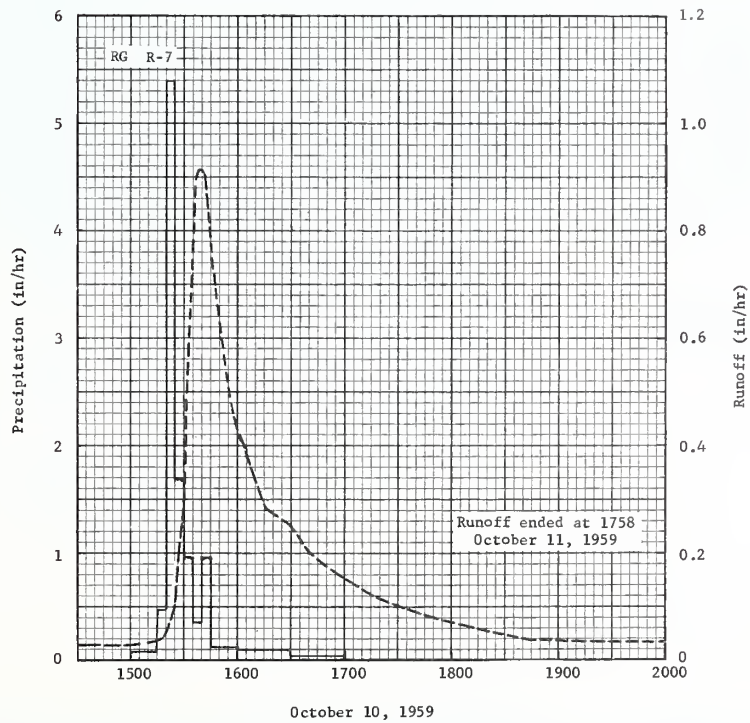
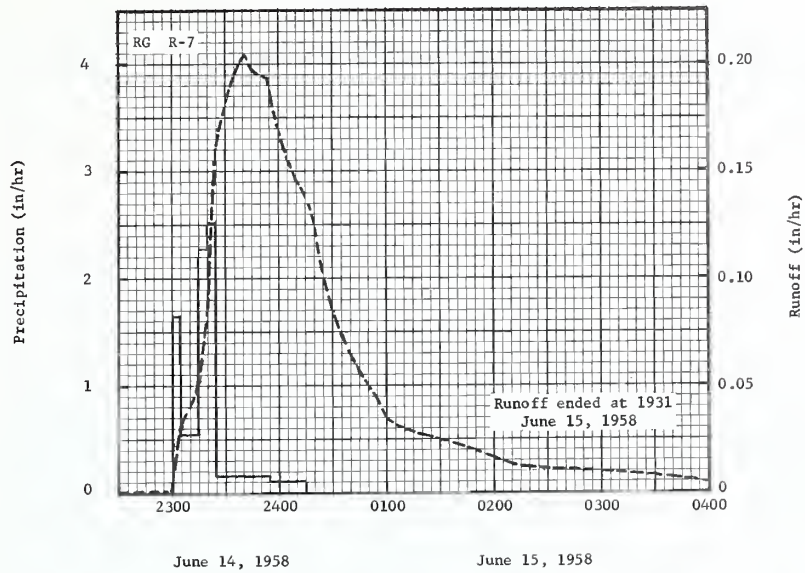
SELECTED RUNOFF EVENTS						McCREIDIE, MISSOURI S. W. POND NO. 2 WATERSHED				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF <u>1/</u>			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
			Event of October 10-11, 1959							
	RG R-7			RG	R-7		10-10	1500	.0261	.000
9-17	.01	.0000	10-10	1500	.00	.00		1520	.0448	.012
9-23	1.81	.0000		1515	.08	.02		1525	.105	.018
9-24	.12	.0000		1520	.48	.06		1532	.447	.050
9-25	.85	.0078		1525	5.40	.51		1536	.860	.094
9-26	.74	.1346		1530	1.68	.65		1540	.913	.153
9-28	.88	.1500		1535	.96	.73		1544	.770	.209
10-2	1.50	.2506		1540	.36	.76		1548	.633	.256
10-3	.05	.0000		1545	.96	.84		1552	.548	.295
10-4	2.30	1.0548		1600	.12	.87		1557	.495	.339
10-5	.13	.1002		1630	.10	.92		1604	.393	.390
10-8	.01	.0000		1700	.04	.94		1616	.282	.458
10-10	<u>2/</u> .84	<u>3/</u> .1132						1630	.250	.520
								1640	.200	.558
								1700	.157	.617
Watershed conditions:								1710	.134	.641
20%—corn, mature but								1736	.100	.692
not harvested								1800	.0763	.727
14%—pasture, poor								1820	.0571	.750
63%—meadow								1839	.0398	.765
3%—roads										
								1910	.0356	.784
								1937	.0351	.800
								2021	.0348	.826
								2042	.0344	.838
								2100	.0341	.848
								2116	.0338	.857
								2140	.0325	.870
								2215	.0320	.889
								2321	.0219	.919
								2400	.0196	.932
							10-11	0048	.0192	.948
								0307	.0094	.981
								0506	.0067	.997
								0601	.0064	1.003
								0802	.0040	1.015
								1057	.0018	1.023
								1410	.0004	1.027
								1758	.0000	1.028

Watershed conditions:
20%—corn, mature but
not harvested
14%—pasture, poor
63%—meadow
3%—roads

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 44.669. ^{1/} FLOWS CORRECTED FOR PONDAGE. ^{2/} RAINFALL FROM 0905 TO 1500. ^{3/} RUNOFF FROM 1047 TO 1500.

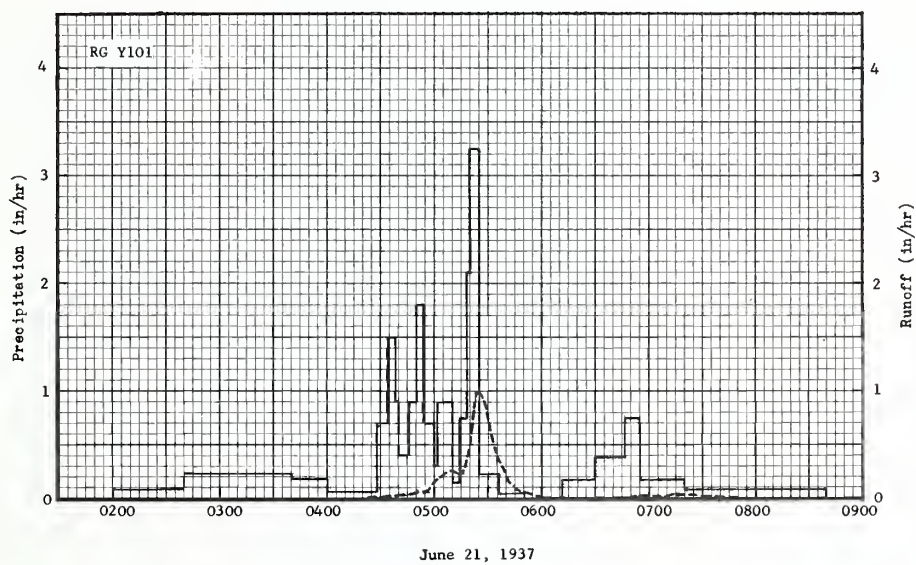


McCREIDIE, MISSOURI S. W. POND NO. 2 WATERSHED



McCREDIE, MISSOURI S. W. POND NO. 2 WATERSHED

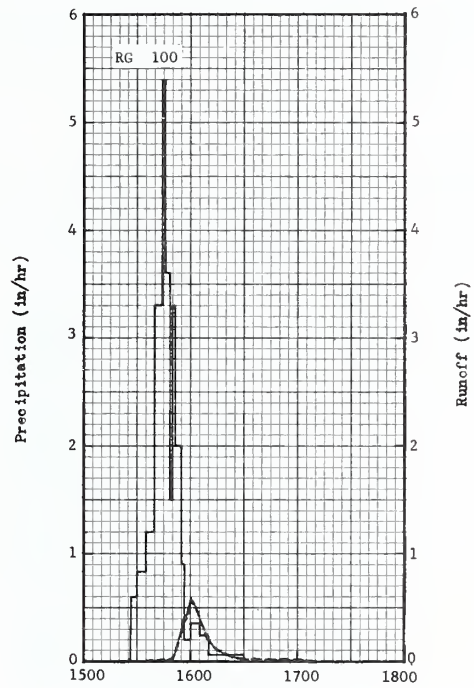
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO							WATERSHED 102		26.01	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963	P1/	2.06	1.13	6.09	3.39	2.19	3.33	2.47	3.57	.19	.41	1.69	1.60	28.12			
	Q	.00	.00	1.69	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.69			
STA AV2/	P	1.47	2.39	4.16	3.23	4.06	5.46	3.98	3.30	2.14	2.51	2.22	2.07	36.99			
(37-63)	Q	.03	.04	.18	.07	.01	.23	.04	.05	.02	.01	T	.00	.68			
MEAN P 3/		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
54 YR																	
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963	3-4	.32	3-4	.28	3-4	.47	3-4	.90	3-4	1.17	3-4	1.25	3-4	1.50	3-1	1.69	
MAXIMUMS FOR PERIOD OF RECORD																	
1937 to 1963 4/	6-12 1957	3.64	6-12 1957	1.31	6-12 1957	1.32	6-12 1957	1.32	6-12 1957	1.32	6-12 1957	1.33	3-4 1963	1.50	3-1 1963	1.69	
NOTES: Watershed conditions: Cover of birdsfoot trefoil. 1/ Rain gage Y101. 2/ Precipitation and runoff records began Apr. 1937. Watershed discontinued Jan. 1, 1947, to Apr. 30, 1957, and Sept. 1, 1957, to Mar. 29, 1960. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio. 4/ No maximums taken for 1947 through 1956 or 1958 and 1959.																	
1937 SELECTED RUNOFF EVENT							COSHOCTON, OHIO							WATERSHED 102		26.01	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
Event of June 21, 1937 5/																	
5-22	RG Y101 .21	.00	6-21	RG Y101 .00	.00	.00	6-21	0433	.0000	.00							
5-26	.56	T		0200	.09	.06		0441	.0151	T							
5-27	.75	T		0340	.23	.29		0445	.0151	T							
6-3	T	.00		0400	.18	.35		0454	.0683	.01							
6-5	.55	.00		0428	.06	.38		0457	.0683	.01							
6-6	.95	.00		0434	.70	.45		0500	.160	.02							
6-8	.07	.00		0438	1.50	.55		0509	.253	.05							
6-9	.78	.00		0440	.90	.58		0510	.253	.05							
6-10	.53	.00		0446	.40	.62		0513	.224	.06							
6-14	1.95	.04		0450	.90	.68		0517	.224	.08							
6-17	.55	T		0454	1.80	.80		0520	.460	.09							
6-20	.43	T		0500	.70	.87		0522	.754	.11							
6-21	6/.31	7/.01		0502	.30	.88		0523	.913	.13							
				0510	.90	1.00		0525	1.07	.16							
				0514	.15	1.01		0528	.881	.21							
				0518	.75	1.06		0532	.587	.26							
				0520	2.10	1.13		0535	.389	.28							
				0525	3.24	1.40		0538	.253	.30							
				0536	.22	1.44		0542	.160	.31							
				0550	.04	1.45		0546	.0810	.32							
				0612	.00	1.45		0550	.0437	.32							
				0630	.17	1.50		0600	.0056	.33							
				0647	.39	1.61		0620	.0000	.33							
				0655	.75	1.71		0630	.0000	.33							
				0720	.17	1.78		0650	.0032	.33							
				0840	.08	1.88		0655	.0111	.33							
								0710	.0032	.33							
								0713	.0151	.33							
								0730	.0032	.33							
								0750	.0000	.33							
Watershed conditions: In pasture of povertygrass cover (prevailing practice)																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.2705. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.1-4. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.1-1 AND 26.30-3. 5/ SUBSTITUTED FOR JUNE 18, 1940, WHICH HAD NO RUNOFF. 6/ RAINFALL PRIOR TO 0125. 7/ RUNOFF PRIOR TO 0433.																	



COSHOCTON, OHIO WATERSHED 102

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO						AREA - 2.71 ACRES		WATERSHED 129		26.03	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963	P1/ Q	2.09 .00	1.01 .11	6.10 4.01	3.01 .00	2.05 .00	3.07 .00	2.46 .00	3.44 .00	1.18 .00	.38 .00	1.67 .00	1.47 .00	26.93 4.12			
STA AV 2/P (38-63) Q		2.73 .05	2.48 .13	3.41 .19	3.36 .06	3.85 .05	4.43 .17	4.20 .07	2.99 .04	2.48 .05	2.15 .01	2.37 .01	2.11 .01	36.56 .84			
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963	3-4	.36	3-4	.34	3-4	.60	3-4	1.53	3-4	2.42	3-4	2.90	3-3	3.51	3-3	4.00	
MAXIMUMS FOR PERIOD OF RECORD																	
1938 to 6-12	2.36E	6-12	.98E	9-1	1.01	3-4	1.53	3-4	2.42	3-4	2.90	3-3	3.51	3-3	4.00		
1963	1957	1957	1950	1950	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	
NOTES: Watershed conditions: Cover of improved practice pasture. 1/ Rain gage 100. 2/ Precipitation and runoff records began Apr., 1938. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																	
1940 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO						WATERSHED 129		26.03			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
Event of June 18, 1940																	
	RG 100			RG	100												
5-19	.15	.01	6-18	1527	.00	.00	6-18	1535	.0000	.00							
5-21	.01	.00		1530	.60	.03		1540	.0037	T							
5-23	.15	.00		1535	.84	.10		1550	.0110	T							
5-24	1.67	.05		1540	1.20	.20		1551	.0582	T							
5-29	.43	.01E		1544	3.30	.42		1552	.126	T							
5-30	.83	.08E		1546	5.40	.60		1553	.212	.01							
5-31	T	.00		1548	3.60	.72		1554	.282	.01							
6-7	.10	T		1550	1.50	.77		1556	.392	.02							
6-8	.34	T		1552	3.30	.88		1558	.480	.04							
6-9	.36	T		1555	2.00	.98		1559	.542	.04							
6-10	1.00	.01		1557	.90	1.01		1600	.593	.05							
6-11	.40	.01		1600	.20	1.02		1602	.542	.07							
6-12	.60	.01		1605	.36	1.05		1605	.392	.10							
6-14	.07	.00		1610	.24	1.07		1608	.260	.11							
6-15	.02	.00		1630	.06	1.09		1610	.187	.12							
6-18	4/.44	5/.01						1612	.146	.13							
											1615	.0988	.13				
											1618	.0582	.14				
											1623	.0315	.14				
											1632	.0110	.14				
											1640	.0037	.14				
											1650	.0015	.14				
											1710	.0000	.14				
Watershed conditions: In pasture (prevailing practice). Grass and weeds 6 in. high, density of cover 80%.																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.7326. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.3-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.3-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1220. 5/ RUNOFF PRIOR TO 1535.																	

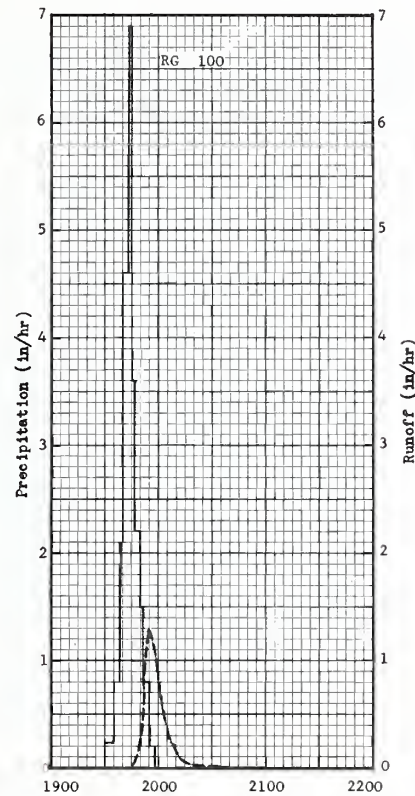
Cooperative Research Project of USDA and Ohio Agricultural Experiment Station



June 18, 1940

COSHOCOTON, OHIO WATERSHED 129

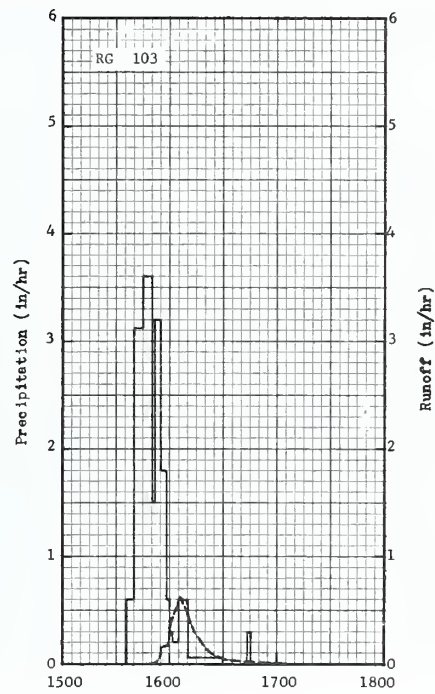
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO WATERSHED 135 AREA—2.69 ACRES							26.04		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/	2.09	1.01	6.10	3.01	2.05	3.07	2.46	3.44	.18	.38	1.67	1.47	26.93		
	Q	.02	.96	3.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.05		
	STA AV 2/P (38-63) Q	2.73	2.48	3.41	3.36	3.85	4.43	4.20	2.99	2.48	2.15	2.37	2.11	36.56		
		.04	.14	.13	.03	.02	.13	.05	.04	.05	T	.01	.01	.65		
	MEAN P 3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.36	3-4	.34	3-4	.63	3-4	1.55	3-4	2.19	3-4	2.51	3-3	3.06E	3-3	3.07E
MAXIMUMS FOR PERIOD OF RECORD																
1938 to 1963	6-12 1957	2.38	6-12 1957	.92	9-1 1950	.94	3-4 1963	1.55	3-4 1963	2.19	3-4 1963	2.51	3-3 1963	3.06E	3-3 1963	3.07E
NOTES: Watershed conditions: Cover of unimproved pasture. 1/ Rain gage 100. 2/ Precipitation and runoff records began Apr., 1938. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT							COSHOCKTON, OHIO WATERSHED 135							26.04		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 100			Event of July 23, 1940 4/												
6-23	.89	T	7-23	RG	100		7-23	1945	.0000	.00						
6-24	.05	.00		1930	.00	.00		1946	.0203	T						
6-25	.23	.00		1935	.24	.02		1947	.0586	T						
6-26	.14	.00		1938	.80	.06		1948	.108	T						
				1940	2.10	.13										
6-28	1.83	.29		1943	4.60	.36		1949	.188	T						
6-30	.62	T		1945	6.90	.59		1950	.324	.01						
7-1	.14	.00		1947	3.60	.71		1951	.512	.02						
7-9	T	.00		1950	2.20	.82		1952	.859	.03						
7-10	T	.00		1952	1.50	.87		1953	1.19	.04						
7-11	.43	.00		1955	.80	.91		1954	1.28	.06						
7-12	T	.00		1958	.20	.92		1956	1.21	.11						
7-15	.13	.00						1957	1.11	.13						
7-22	.92	.01						1958	.988	.14						
7-23	5/.66	.00						1959	.877	.16						
								2000	.730	.17						
								2001	.664	.18						
								2002	.560	.19						
								2003	.468	.20						
								2004	.394	.21						
								2005	.339	.22						
								2006	.284	.22						
								2007	.236	.22						
								2008	.188	.23						
								2010	.136	.23						
								2012	.0907	.24						
								2015	.0512	.24						
								2020	.0203	.24						
								2050	.0000	.25						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.7124. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.4-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.4-1, AND 26.30-3. 4/ SUBSTITUTED FOR JUNE 18, 1940, FOR WHICH RUNOFF WAS SLIGHT, PEAK 0.0316 IN/HR.																
5/ RAINFALL PRIOR TO 1710.																



July 23, 1940

COSHOCTON, OHIO WATERSHED 135

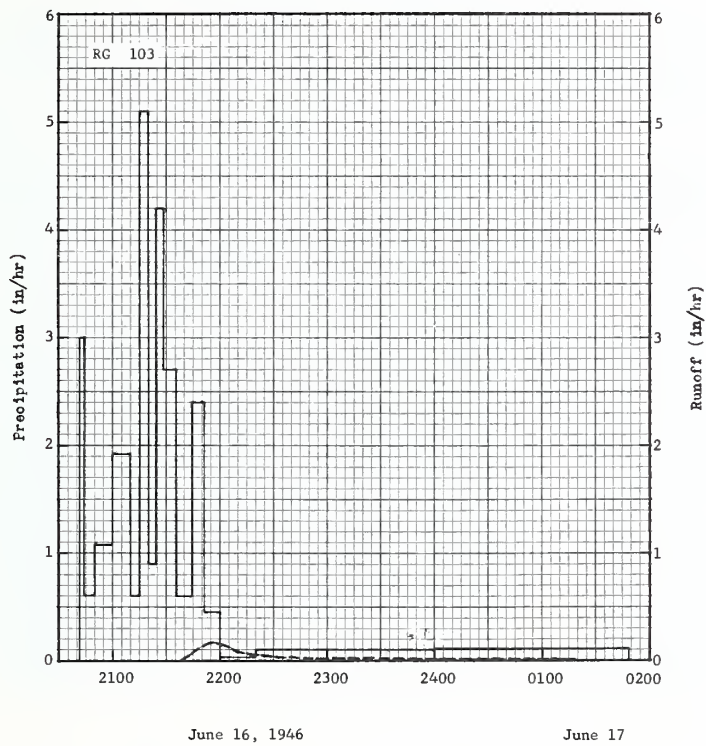
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCOTON, OHIO		WATERSHED 130		26.05					
							AREA - 1.63 ACRES									
MONTH		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/Q	2.10 .01	1.07 .00	5.90 3.36	2.83 .00	2.05 .00	2.89 .00	2.42 .00	3.06 .00	.17 .00	.38 .00	1.56 .00	1.52 .00	25.95 3.37		
STA AV (38-63)	2/P 0	2.69 .11	2.40 .16	3.27 .20	3.25 .09	3.80 .03	4.35 .21	4.29 .07	2.88 .02	2.52 .06	2.15 T	2.37 T	2.09 .01	36.06 .96		
MEAN P 3/54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.39	3-4	.36	3-4	.64	3-4	1.55	3-4	2.16	3-4	2.54	3-3	3.14E	3-3	3.33E
MAXIMUMS FOR PERIOD OF RECORD																
1938 to 1963	6-12 1957	4.06	6-12 1957	1.42	6-12 1957	1.44	3-4 1963	1.55	3-4 1963	2.16	3-4 1963	2.54	3-3 1963	3.14E	3-3 1963	3.33E
NOTES: Watershed conditions: Cover of improved practice meadow. 1/ Rain gage 103. 2/ Precipitation and runoff records began May, 1938. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT							COSHOCOTON, OHIO		WATERSHED 130		26.05					
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
	RG 103			RG	103											
5-19	.15	.00	6-18	1536	.00	.00	6-18	1549	.0000	.00						
5-21	.01	.00		1540	.60	.04		1551	.0049	T						
5-23	.11	.00		1545	3.12	.30		1552	.0146	T						
5-24	1.62	.00		1550	3.60	.60		1553	.0249	T						
5-29	.45	.00		1552	1.50	.65		1554	.0730	T						
5-30	.78	.00		1555	3.20	.81		1555	.158	T						
6-7	.12	.00		1558	1.80	.90		1559	.183	.01						
6-8	.26	.00		1600	.60	.92		1600	.329	.02						
6-9	.32	.00		1602	.30	.93		1602	.426	.03						
6-10	1.01	T		1605	.20	.94		1604	.529	.05						
6-11	.47	T		1610	.60	.99		1606	.608	.07						
6-12	.62	T		1630	.06	1.01		1609	.493	.09						
6-14	.06	.00		1643	.00	1.01		1611	.389	.11						
6-15	T	.00		1645	.30	1.02		1614	.298	.13						
6-18	4/.43	.00						1616	.237	.13						
Watershed conditions: In permanent meadow (prevailing practice). Grass, clover, and weeds 6 in. high, density of clover 95%.											1618	.183	.14			
											1621	.134	.15			
											1624	.0913	.16			
											1627	.0548	.16			
											1630	.0389	.16			
											1633	.0249	.16			
											1638	.0146	.16			
											1644	.0049	.17			
											1654	.0018	.17			
											1700	.0018	.17			
											1705	.0000	.17			
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6436. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.5-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.5-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130.																



June 18, 1940

COSHOCTON, OHIO WATERSHED 130

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCOTON, OHIO		AREA - 2.21 ACRES		WATERSHED 131		26.07				
MONTH YEAR		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.10 .00	1.07 .00	5.90 .17	2.83 .00	2.05 .00	2.89 .00	2.42 .00	3.06 .00	.17 .00	.38 .00	1.56 .00	1.52 .00	25.95 .17		
STA AV 2/P (38-63)	Q	2.69 .03	2.40 .02	3.27 .03	3.25 .02	3.80 .01	4.35 .04	4.29 .01	2.88 T	2.52 .01	2.15 T	2.37 T	2.09 T	36.06 .17		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.02	3-4	.02	3-4	.03	3-4	.09	3-4	.13	3-4	.15	3-4	.15	3-4	.15
MAXIMUMS FOR PERIOD OF RECORD																
1963 to 1963	6-12 1957	1.18	6-12 1957	.41	6-12 1957	.45	6-12 1957	.45	6-12 1957	.45	6-12 1957	.45	6-12 1957	.45	6-12 1957	.45
Notes: Watershed conditions: Cover of uneven age hardwoods. 1/ Rain gage 103. 2/ Precipitation and runoff records began May, 1938. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1946 SELECTED RUNOFF EVENT						COSHOCOTON, OHIO		WATERSHED 131		26.07						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 103			Event of June 16, 1946 4/												
5-18	.06	.00	6-16	RG 103			6-16									
5-20	.69	.00		2042	.00	.00		2138	.0000	.00						
5-21	.06	.00		2044	3.00	.10		2140	.0050	T						
5-24	.06	.00		2050	.60	.16		2141	.0256	T						
				2100	1.08	.34		2142	.0440	T						
5-25	.41	.00		2110	1.92	.66		2144	.0642	T						
5-26	.39	.00		2116	.60	.72		2146	.0942	.01						
5-27	.92	.00		2120	5.10	1.06		2152	.139	.02						
5-28	.04	.00		2124	.90	1.12		2154	.162	.02						
5-31	.06	.00		2128	4.20	1.40		2156	.175	.03						
6-1	.40	.00		2136	2.70	1.76		2158	.171	.03						
6-2	.17	.00		2144	.60	1.84		2200	.153	.04						
6-3	.01	.00		2152	2.40	2.16		2204	.121	.05						
6-5	T	.00		2200	.45	2.22		2208	.0875	.05						
6-11	.02	.00		2220	.03	2.23		2216	.0538	.06						
6-12	.57	.00	6-17	2400	.10	2.39		2228	.0301	.07						
6-13	.74	.00		0148	.11	2.58		2258	.0113	.08						
								2328	.0022	.09						
								2400	.0001	.09						
								0118	.0000	.09						
Watershed conditions: Uneven age stand of hardwood, good woodland management, no grazing. Trees up to 70 ft high, shrubs 18 in. high, herbs 6 in. high.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.2284. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.7-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.7-1 AND 26.30-3. 4/ SUBSTITUTED FOR JUNE 18, 1940, WHICH HAD NO RUNOFF.																

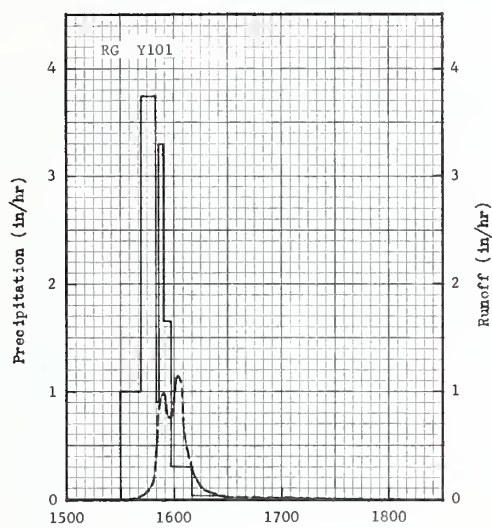


COSHOCTON, OHIO WATERSHED 131

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO		WATERSHED 132		26.08						
						AREA - 0.590 ACRES										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.10 .00	1.07 .00	5.90 2.22	2.83 .45	2.05 .00	2.89 .33	2.42 .00	3.06 .00	.17 .00	.38 .00	1.56 .00	1.52 .00	25.95 3.00		
STA AV (48-63)	2/P Q	3.35 .23	2.62 .16	3.10 .27	3.36 .26	3.20 .06	3.87 .17	4.58 .01	2.46 T	2.52 .02	1.91 T	2.49 .00	2.22 .01	35.68 1.19		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-5	.22	3-5	.20	3-5	.35	3-5	.84	3-5	1.27	3-5	1.62	3-4	1.77	3-4	1.79
MAXIMUMS FOR PERIOD OF RECORD																
1948 to 1963	6-12 1957	2.00E	4-25 1961	.73	4-25 1961	.99	4-25 1961	1.37	4-25 1961	1.52	1-21 1959	2.00E	1-21 1959	2.00E	4-21 1961	2.08
NOTES: Watershed conditions: Cover of uneven age hardwoods. 1/ Rain gage 103. 2/ Precipitation and runoff records began May 1948. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1956 SELECTED RUNOFF EVENT :						COSHOCKTON, OHIO						WATERSHED 132		26.08		
ANTECEDENT CONOITIONS			RAINFALL						RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of February 25, 1956 4/																
	RG 103			RG 103												
1-26	TS	.00	2-25	0501	.00	.00	2-25	0620	.0000	.00						
1-28	.34	.00		0505	2.40	.16		0640	.0012	T						
1-29	.12	.00		0517	.40	.24		0700	.0094	T						
1-30	.54	.00		0548	.00	.24		0720	.0252	.01						
1-31	TS	.00		0551	5.00	.49		0750	.0354	.02						
2-1	.14S	.00		0605	.30	.56		0810	.0960	.04						
2-2	.64	.00		0617	.10	.58		0820	.151	.07						
2-4	.03	.00		0657	.48	.90		0830	.178	.09						
2-6	.74	.00		0709	.20	.94		0850	.164	.15						
2-9	.06	.00		0721	.15	.97		0920	.139	.23						
2-11	.50	.00		0741	.24	1.05		0950	.116	.29						
2-12	TS	.00		0805	.52	1.26		1020	.0866	.34						
2-14	.04	.00		0809	2.70	1.44		1050	.0695	.38						
2-15	.44	.00		0813	.45	1.47		1120	.0354	.41						
2-16	.04	.00		0909	.15	1.61		1300	.0354	.46						
2-17	.19	.00		0941	.02	1.62		1320	.0252	.47						
2-18	.31	.00						1350	.0163	.48						
2-21	TS	.00						1420	.0067	.49						
2-24	.33	.00						1520	.0000	.49						
2-25	5/.26	.00														
Watershed conditions: Uneven age stand of hardwood, good woodland management, no grazing. Trees up to 70 ft high, shrubs 6 in. high.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.5949. FOR REVISED MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, P. 26.8-2. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.8-1 AND 26.30-3. 4/ SUBSTITUTED FOR JUNE 18, 1940, STATION NOT IN OPERATION. 5/ RAINFALL PRIOR TO 0501.																

26.8-2

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO				WATERSHED 123				26.10	
							AREA - 1.37 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.06 .00	1.13 .00	6.23 1.98	3.34 .01	2.20 .00	3.46 .00	2.64 .00	3.63 .00	.19 .00	.35 .00	1.68 .00	1.58 .00	28.49 1.99		
STA AV 2/P (39-63) Q		2.76 .40	2.51 .35	3.34 .39	3.46 .27	3.85 .14	4.64 .35	4.33 .14	2.96 .09	2.53 .06	2.29 .02	2.47 .01	2.23 .14	37.37 2.36		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-19	.32	3-19	.23	3-4	.32	3-4	.81	3-4	1.23	3-4	1.40	3-4	1.58	3-4	1.58
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1963	6-12 1957	5.97	6-12 1957	1.37	6-12 1957	1.48	6-28 1957	1.51	1-21 1959	1.84	1-21 1959	2.33	1-21 1959	2.33	1-21 1959	2.33
NOTES: Watershed conditions: First year meadow cover, improved practice. 1/ Rain gage Y103. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT							COSHOCKTON, OHIO				WATERSHED 123				26.10	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG Y103			Event of June 18, 1940												
5-19	.21	.00	6-18	RG	Y101 4/		6-18	1535	.0000	.00						
5-21	.02	.00		1530	.00	.00		1540	.0145	T						
5-23	.12	.00		1542	1.00	.20		1543	.0432	T						
5-24	1.60	.05		1550	3.75	.70		1546	.0852	T						
				1552	.90	.73										
5-27	T	.00		1554	3.30	.84		1548	.171	.01						
5-29	.42	T		1558	1.65	.95		1550	.553	.02						
5-30	1.03	.02		1610	.30	1.01		1552	.890	.05						
6 -7	.09	.00		1628	.03	1.02		1553	.970	.06						
6 -8	.35	.00						1554	.970	.08						
6 -9	.37	T						1555	.890	.09						
6-10	.80	.07						1557	.746	.12						
6-11	.32	.01						1558	.746	.13						
6-12	.59	.05						1600	.970	.16						
6-14	.11	.00						1601	1.12	.18						
6-18	5/.41	6/ T						1602	1.14	.20						
								1603	1.09	.22						
								1605	.746	.25						
								1607	.479	.27						
								1609	.317	.28						
								1611	.203	.29						
								1613	.151	.30						
								1615	.116	.30						
								1617	.0852	.31						
								1620	.0594	.31						
								1625	.0253	.31						
								1632	.0114	.31						
								1638	.0044	.32						
								1647	.0013	.32						
								1745	.0000	.32						
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 30 in. high, grass and clover 3 in. high, density of cover 60%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.3814. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.10-6. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.10-1 AND 26.30-3. 4/ SUBSTITUTED FOR Y103, RECORD LOST. 5/ RAINFALL PRIOR TO 1130. 6/ RUNOFF PRIOR TO 1535.																

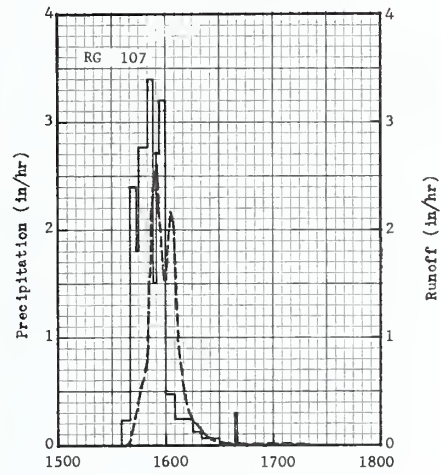


June 18, 1940

COSHOCTON, OHIO WATERSHED 123

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO AREA - 1.61 ACRES WATERSHED 115 26.11										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.06 .00	1.13 .00	6.23 1.71	3.34 .01	2.20 .00	3.46 .00	2.64 .00	3.63 .00	.19 .00	.35 .00	1.68 .00	1.58 .00	28.49 1.72		
STA AV 2/P (39-63) Q		2.81 .23	2.44 .25	3.33 .19	3.46 .14	3.85 .17	4.64 .45	4.33 .34	2.96 .18	2.53 .14	2.29 .04	2.47 .02	2.23 .06	37.34 2.21		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.16	3-4	.15	3-4	.27	3-4	.79	3-4	1.25	3-4	1.46	3-3	1.66	3-3	1.66
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1963	6-12 1957	4.12	9-1 1950	1.33	9-1 1950	1.56	9-1 1950	1.58	9-1 1950	1.59	9-1 1950	1.59	3-3 1963	1.66	6-29 1941	2.85
NOTES: Watershed conditions: Cover of first year meadow, prevailing practice. 1/ Rain gage Y103. 2/ Precipitation and runoff records began Apr., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO WATERSHED 115 26.11										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
5-19	RG Y103 .21	.00	6-18	RG 1535	1074/ .00	.00	6-18	1535	.0000	.00						
5-21	.02	.00		1540	.24	.02		1539	.0036	T						
5-23	.12	.00		1543	2.40	.14		1541	.0413	T						
5-24	1.60	.31		1545	1.80	.20		1542	.129	T						
5-27	T	.00		1550	2.76	.43		1543	.246	T						
5-29	.42	.06		1553	3.40	.60		1545	.439	.02						
5-30	1.03	.31		1555	1.50	.65		1549	.739	.05						
6-7	.09	.00		1557	2.70	.74		1550	1.02	.07						
6-8	.35	.01		1600	3.20	.90		1551	1.49	.09						
6-9	.37	.04		1605	.48	.94		1552	1.98	.12						
6-10	.80	.26		1615	.24	.98		1553	2.39	.16						
6-11	.32	.10		1620	.12	.99		1555	2.61	.24						
6-12	.59	.28		1630	.06	1.00		1556	2.22	.28						
6-14	.11	.00		1638	.00	1.00		1559	1.52	.37						
6-18	5/.41	6/.03		1640	.30	1.01		1600	1.52	.40						
								1603	2.18	.49						
								1605	1.69	.55						
								1606	1.31	.58						
								1607	.973	.60						
								1608	.739	.61						
								1610	.505	.63						
								1615	.224	.66						
								1620	.129	.68						
								1623	.0727	.68						
								1627	.0413	.69						
								1631	.0252	.69						
								1636	.0123	.69						
								1647	.0036	.69						
								1720	.0000	.69						
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 30 in. high, grass and clover 2 in. high, density of cover 60%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6234. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.11-6. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.11-1 AND 26.30-3. 4/ SUBSTITUTED FOR Y103, RECORD LOST. 5/ RAINFALL PRIOR TO 1130. 6/ RUNOFF PRIOR TO 1535.																

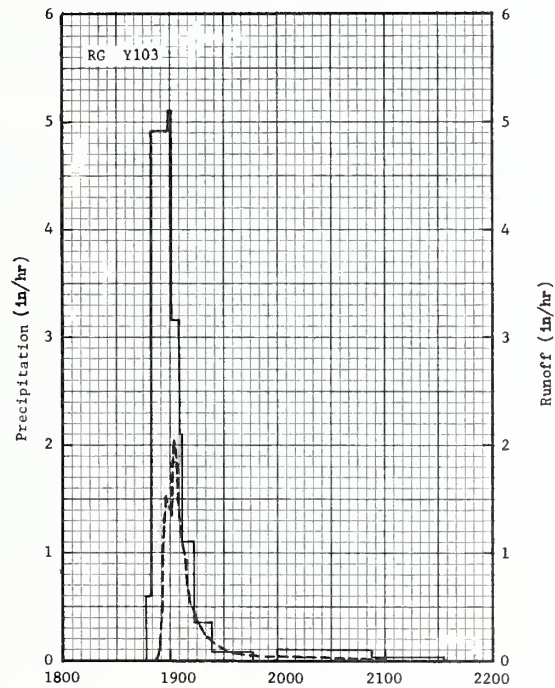
Cooperative Research Project of USDA and Ohio Agricultural Experiment Station



June 18, 1940

COSHOCTON, OHIO WATERSHED 115

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO		AREA - 1.65 ACRES		WATERSHED 127		26.12				
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	PI/ Q	2.06 .00	1.13 .15	6.23 1.80	3.34 .01	2.20 .00	3.46 .00	2.64 .00	3.63 .00	.19 .00	.35 .00	1.68 .00	1.58 .00	28.49 1.96		
STA AV (49-63)	2/P Q	3.33 .94	2.73 .67	3.16 .54	3.66 .40	3.29 .09	4.05 .34	4.61 .13	2.76 .08	2.51 .10	1.97 T	2.56 .05	2.32 .33	36.95 3.67		
MEAN P 54 YR	3/ Q	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-19	.34	3-4	.20	3-4	.35	3-4	.86	3-4	1.22	3-4	1.32	3-3	1.52	3-1	1.55
MAXIMUMS FOR PERIOD OF RECORD																
1949 to 1963	6-12 1957	3.12	9-1 1950	1.33	9-1 1950	1.48	6-12 1957	1.49	1-26 1952	1.97	1-26 1952	2.65	1-25 1952	2.82	1-25 1952	2.85
NOTES: Watershed conditions: Cover of first year meadow, improved practice plus mulch tillage. 1/ Rain gage Y103. 2/ Precipitation and runoff records began May, 1949. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1949 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO		WATERSHED 127		26.12						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 6, 1949 4/																
6-10	RG Y103 .04	.00	7-6	RG 1847	Y103 .00	.00	7-6	1852	.0000	.00						
6-11	.24	.00		1849	.60	.02		1853	.0462	T						
6-12	.50	T		1859	4.92	.84		1854	.141	T						
6-13	.07	.00		1901	5.10	1.01		1855	.345	.01						
6-14	.02	.00		1905	3.15	1.22		1856	.468	.01						
6-15	.01	.00		1907	2.10	1.29		1857	1.18	.03						
6-16	.09	.00		1913	1.10	1.40		1858	1.52	.05						
6-17	.24	.00		1923	.36	1.46		1901	1.33	.12						
6-21	T	.00		1947	.08	1.49		1902	2.05	.15						
6-24	.45	.00		2001	.00	1.49		1903	1.83	.18						
6-25	.40	.00		2053	.10	1.58		1904	1.49	.21						
6-26	.10	.00		2133	.03	1.60		1906	1.18	.25						
6-27	.14	.00						1908	.921	.29						
6-30	.10	.00						1910	.650	.31						
7-6	5/1.00	6/ T						1911	.537	.32						
								1913	.404	.34						
								1916	.331	.36						
								1918	.243	.37						
								1923	.159	.38						
								1928	.101	.39						
								1935	.0566	.40						
								1948	.0367	.41						
								2013	.0173	.43						
								2033	.0044	.43						
								2043	.0013	.43						
								2100	.0000	.43						
Watershed conditions: In corn of a corn, wheat, meadow, meadow rotation (improved practice). Corn cultivated July 5.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6637. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.12-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.12-1 AND 26.30-3. 4/ SUBSTITUTED FOR JUNE 18, 1940, STATION NOT YET IN OPERATION. 5/ RAINFALL PRIOR TO 1223. 6/ RUNOFF PRIOR TO 1852.																

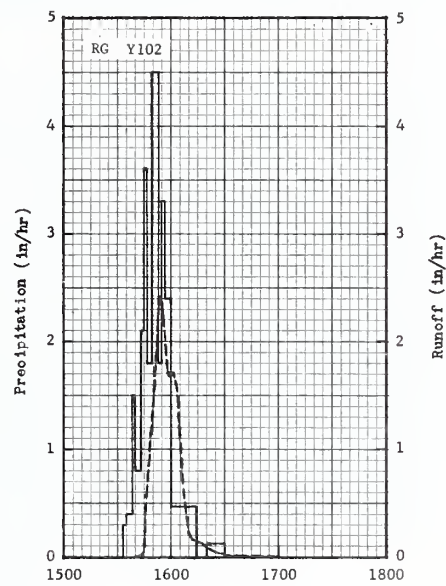


July 6, 1949

COSHOCOTON, OHIO WATERSHED 127

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO		WATERSHED 109		26.13					
							AREA - 1.69 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/Q	2.06 .00	1.13 .02	6.14 2.67	3.17 .00	2.17 .00	3.18 .00	2.63 .00	3.41 T	.17 .00	.37 .00	1.61 .00	1.57 .00	27.61 2.69		
STA AV 2/P (38-63)	Q	2.66 .08	2.41 .18	3.30 .16	3.43 .05	3.86 .13	4.61 .32	4.42 .25	2.91 .18	2.56 .06	2.24 .02	2.38 T	2.11 .02	36.89 1.45		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.32	3-4	.32	3-4	.56	3-4	1.35	3-4	1.92	3-4	2.17	3-3	2.55	3-1	2.66
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1963	5-17 1941	4.34E	6-29 1941	.82E	6-28 1940	1.09	3-4 1963	1.35	3-4 1963	1.92	3-4 1963	2.17	3-3 1963	2.55	3-1 1963	2.66
NOTES: Watershed conditions: Cover of first year meadow, improved practice. 1/ Rain gage Y102. 2/ Precipitation and runoff records began Nov., 1938. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT							COSHOCTON, OHIO		WATERSHED 109		26.13					
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
	RG Y102			RG	Y102											
5-19	.20	T	6-18	1533	.00	.00	6-18	1540	.0000	.00						
5-21	.02	.00		1535	.30	.01		1544	.0316	T						
5-23	.13	.00		1538	.40	.03		1545	.106	T						
5-24	1.55	.40		1540	1.50	.08		1546	.284	.01						
5-27	T	.00		1543	.80	.12		1547	.599	.01						
5-29	.34	.06		1545	2.10	.19		1548	.945	.02						
5-30	.89	.10		1547	3.60	.31		1550	1.33	.06						
6-7	.07	.00		1549	1.80	.37		1551	1.58	.09						
6-8	.29	T		1553	4.50	.67		1552	1.82	.12						
6-9	.31	.02		1555	1.80	.73		1553	2.20	.15						
6-10	.90	.38		1557	3.30	.84		1554	2.41	.19						
6-11	.42	.10		1600	2.40	.96		1555	2.36	.23						
6-12	.64	.25		1614	.47	1.07		1556	2.16	.26						
6-14	.07	.00		1620	.00	1.07		1557	1.97	.30						
6-18	4/.45	5/.02		1630	.12	1.09		1558	1.75	.33						
								1559	1.68	.36						
								1601	1.71	.41						
								1602	1.61	.44						
								1604	1.21	.49						
								1606	.716	.52						
								1608	.379	.54						
								1610	.214	.55						
								1612	.164	.55						
								1615	.146	.56						
								1618	.113	.57						
								1620	.0851	.57						
								1622	.0552	.57						
								1625	.0358	.58						
								1627	.0204	.58						
								1630	.0137	.58						
								1640	.0026	.58						
								1700	.0000	.58						
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 35 in. high, clover and weeds 3 in. high, density of cover 65%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.7041. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.13-4. FOR GEOLOGIC DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.13-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1318. 5/ RUNOFF PRIOR TO 1540.																

Cooperative Research Project of USDA and Ohio Agricultural Experiment Station

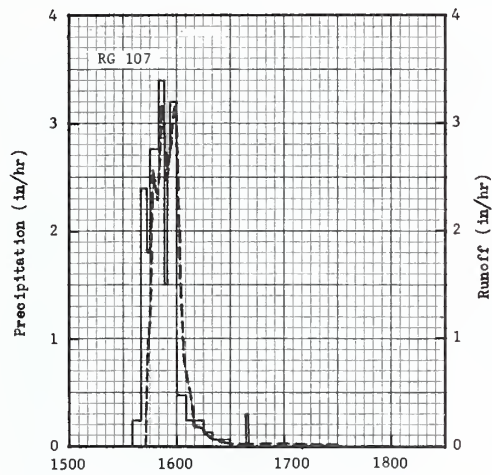


June 18, 1940

COSHOCTON, OHIO WATERSHED 109

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO		AREA - 0.650 ACRES		WATERSHED 103		26.14				
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.07 .02	1.13 1.50	5.95 4.59	2.75 .01	1.96 .00	3.19 .00	2.39 .00	2.87 .00	.22 .00	.27 .00	1.63 .00	1.44 .00	25.87 6.12		
STA AV 2/P (39-63) Q		2.65 .36	2.27 .40	3.22 .57	3.28 .28	3.63 .16	4.39 .45	4.22 .30	2.85 .15	2.54 .16	2.15 .03	2.33 .03	2.09 .11	35.62 3.00		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.49	3-4	.47	3-4	.88	3-4	2.09	3-4	2.82	3-4	3.07	3-3	3.50	3-1	4.15
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1963	7-23 1940	4.72	9-1 1950	1.95	9-1 1950	2.60	9-1 1950	2.62	3-4 1963	2.82	3-4 1963	3.07	3-3 1963	3.50	3-1 1963	4.15
NOTES: Watershed conditions: Cover of wheat to meadow, improved practice. 1/ Rain gage 107. 2/ Precipitation and runoff records began Apr., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCTON, OHIO		WATERSHED 103		26.14						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
	RG 107			RG	107											
5-19	.20	.00	6-18	1535	.00	.00	6-18	1543	.0000	.00						
5-21	.03	.00		1540	.24	.02		1544	.519	.00						
5-23	.12	.00		1543	2.40	.14		1545	1.14	.02						
5-24	1.54	.71		1545	1.80	.20		1546	2.11	.05						
5-29	.43	.10		1550	2.76	.43		1547	2.53	.08						
5-30	.86	.21		1553	3.40	.60		1549	2.29	.16						
6-7	.12	.00		1555	1.50	.65		1550	2.47	.20						
6-8	.25	.00		1557	2.70	.74		1551	2.87	.25						
6-9	.27	.00		1600	3.20	.90		1552	3.16	.30						
6-10	.75	.30		1605	.48	.94		1553	2.87	.35						
6-11	.35	.17		1615	.24	.98		1555	2.47	.44						
6-12	.57	.30		1620	.12	.99		1557	2.87	.53						
6-14	.06	.00		1630	.06	1.00		1559	3.16	.63						
6-15	.01	.00		1638	.00	1.00		1600	2.87	.68						
6-18	4/.45	5/.09		1640	.30	1.01		1601	2.00	.72						
								1602	1.49	.75						
								1603	1.02	.77						
								1604	.812	.78						
								1606	.600	.81						
								1608	.446	.82						
								1609	.212	.83						
								1610	.183	.83						
								1613	.183	.84						
								1618	.0865	.85						
								1623	.0520	.86						
								1629	.0253	.86						
								1642	.0076	.86						
								1730	.0000	.87						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.65542. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.14-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.14-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1543.																

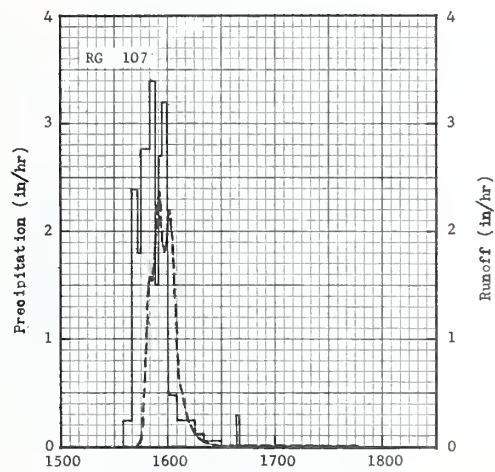
Cooperative Research Project of USDA and Ohio Agricultural Experiment Station



June 18, 1940

COSHOCTON, OHIO WATERSHED 103

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO			AREA - 1.27 ACRES			WATERSHED 110		26.15	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/Q	2.07 .06	1.13 .67	5.95 5.31	2.75 .02	1.96 .00	3.19 .14	2.39 .00	2.87 .00	.22 .00	.27 .00	1.63 .00	1.44 .00	25.87 6.20		
STA AV 2/P (39-63)	Q	2.65 .26	2.27 .27	3.22 .39	3.28 .17	3.63 .14	4.39 .40	4.22 .30	2.85 .13	2.54 .17	2.15 .04	2.33 .02	2.09 .11	35.62 2.40		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE	MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
		1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
		DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963	3-4	.37	3-4	.36	3-4	.65	3-4	1.75	3-4	2.63	3-4	3.16	3-3	4.12	3-1	5.05
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1963	7-28 1950	4.44	9-1 1950	2.24	9-1 1950	3.16	9-1 1950	3.19	9-1 1950	3.19	9-1 1950	3.20	3-3 1963	4.12	3-1 1963	5.05
NOTES: Watershed conditions: Cover of wheat to meadow, prevailing practice. 1/ Rain gage 107. 2/ Precipitation and runoff records began Apr., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT							COSHOCKTON, OHIO			WATERSHED 110			26.15			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 107			Event of June 18, 1940												
5-19	.20	.00	6-18	RG	107		6-18	1542	.0000	.00						
5-21	.03	.00		1535	.00	.00		1545	.0641	T						
5-23	.12	.00		1540	.24	.02		1546	.256	T						
5-24	1.54	.43		1543	2.40	.14		1547	.516	.01						
				1545	1.80	.20										
5-29	.43	.09		1550	2.76	.43		1548	1.11	.02						
5-30	.86	.24		1553	3.40	.60		1549	1.51	.04						
6-7	.12	.00		1555	1.50	.65		1550	1.58	.07						
6-8	.25	.00		1557	2.70	.74		1551	1.54	.10						
6-9	.27	.00		1600	3.20	.90		1553	1.85	.15						
6-10	.75	.26		1605	.48	.94		1554	2.24	.19						
6-11	.35	.13		1615	.24	.98		1555	2.37	.23						
6-12	.57	.26		1620	.12	.99		1556	2.10	.26						
6-14	.06	.00		1630	.06	1.00		1557	1.93	.30						
6-15	.01	.00		1638	.00	1.00		1558	1.81	.33						
6-18	4/.45	5/.05		1640	.30	1.01		1559	1.98	.36						
								1601	2.19	.43						
								1602	2.01	.46						
								1603	1.51	.49						
								1604	1.14	.51						
								1606	.619	.54						
								1609	.374	.57						
								1612	.231	.58						
								1615	.108	.59						
								1617	.0774	.59						
								1622	.0413	.60						
								1627	.0233	.60						
								1633	.0094	.60						
								1645	.0014	.60						
								1747	.0000	.60						
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 35 in. high, clover and weeds 3 in. high, density of cover 65%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.2806. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.14-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.15-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1542.																

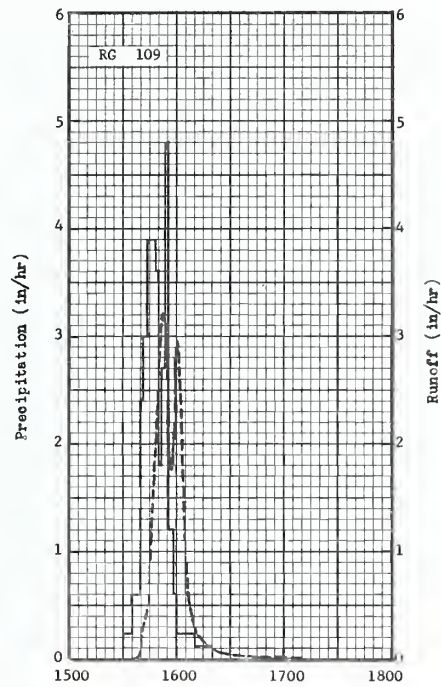


June 18, 1940

COSHOCTON, OHIO WATERSHED 110

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO		AREA - 1.45 ACRES		WATERSHED 113		26.16				
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.06 .03	1.04 1.11	5.80 3.02	2.92 .00	2.23 T	3.09 .32	2.94 .00	3.18 T	.15 .00	.29 .00	1.72 .00	1.42 .00	26.84 4.48		
STA AV 2/P (39-63) Q		2.71 .26	2.36 .43	3.25 .27	3.28 .17	3.89 .13	4.51 .40	4.10 .16	2.92 .20	2.62 .09	2.22 .04	2.39 .02	2.17 .06	36.42 2.23		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-5	.60	3-4	.24	3-4	.43	3-4	1.05	3-4	1.50	3-4	1.70	3-3	2.00	3-1	2.69
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1963	6-12 1957	3.77	9-1 1950	1.03	4-25 1961	1.20	6-28 1957	1.35	3-4 1963	1.50	3-4 1963	1.70	3-3 1963	2.00	3-1 1963	2.69
NOTES: Watershed conditions: Cover of meadow to corn to wheat, improved practice. 1/ Rain gage 109. 2/ Precipitation and runoff records began Sept., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshockton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO		WATERSHED 113		26.16						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 109			Event of June 18, 1940												
5-19	.33	.06	6-18	RG	109	.00	6-18	1535	.0000	.00						
5-21	.05	.00		1530	.00	.00		1537	.0042	T						
5-23	.16	.00		1535	.24	.02		1539	.0204	T						
5-24	1.55	.61		1540	.60	.07		1540	.0740	T						
				1542	2.40	.15										
5-29	.28	.04E		1544	3.00	.25		1541	.274	T						
5-30	.93	.36E		1548	3.90	.51		1543	.452	.02						
6-7	.08	.00		1550	3.60	.63		1545	.793	.04						
6-8	.28	.09		1552	1.80	.69		1546	1.16	.05						
6-9	.22	.01		1554	2.70	.78		1548	2.04	.11						
6-10	.64	.27		1556	4.80	.94		1550	2.65	.19						
6-11	.44	.22		1558	1.20	.98		1551	3.00	.24						
6-12	.76	.45		1600	.60	1.00		1552	3.21	.29						
6-14	.08	.00		1610	.24	1.04		1553	3.11	.34						
6-15	.08	.00		1620	.12	1.06		1555	2.29	.43						
6-18	4/.42	5/.06						1556	1.88	.47						
								1557	1.76	.50						
								1558	2.08	.53						
								1559	2.61	.57						
								1600	2.95	.62						
								1601	2.85	.66						
								1602	2.47	.71						
								1604	1.14	.77						
								1606	.600	.80						
								1608	.371	.82						
								1612	.213	.83						
								1618	.102	.85						
								1623	.0562	.86						
								1632	.0204	.86						
								1644	.0042	.86						
								1710	.0000	.86						
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 30 in. high, clover and weeds 3 in. high, density of cover 55%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.4621. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.16-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.16-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1535.																

Cooperative Research Project of USDA and Ohio Agricultural Experiment Station

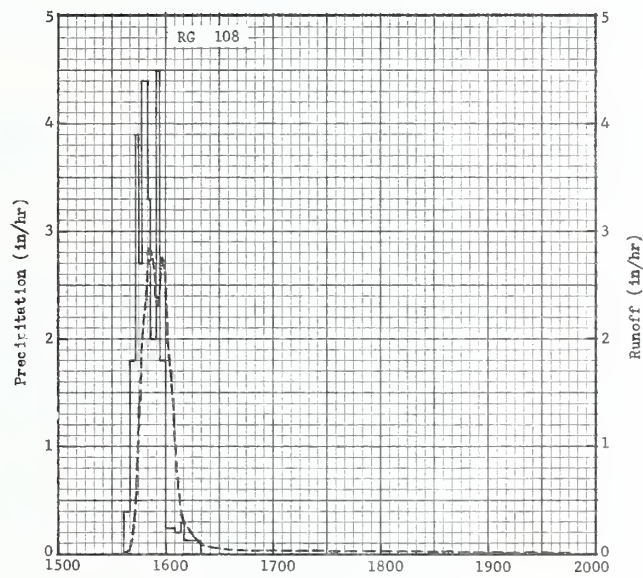


June 18, 1940

COSHOCOTON, OHIO WATERSHED 113

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCOTON, OHIO		AREA - 1.96 ACRES		WATERSHED 118		26.17				
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963	PL Q	2.07 .05	1.16 .15	6.19 3.03	2.94 .00	2.17 .00	3.32 .60	3.00 .00	2.97 T	.17 .00	.28 .00	1.64 .00	1.49 .00	27.40 3.83		
STA AV 2/P (40-63) Q		2.83 .30	2.44 .34	3.37 .40	3.37 .23	3.85 .12	4.47 .45	4.18 .16	2.94 .27	2.75 .16	2.15 .01	2.52 .04	2.22 .09	37.09 2.57		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-5	1.36	6-5	.25	3-4	.43	3-4	1.04	3-4	1.49	3-4	1.78	3-4	2.39	3-1	2.74
MAXIMUMS FOR PERIOD OF RECORD																
1940 TO 1963	6-12 1957	3.11	9-1 1950	1.30	9-1 1950	1.59	9-1 1950	1.60	9-1 1950	1.60	3-4 1963	1.78	3-4 1963	2.39	3-1 1963	2.74
NOTES: Watershed conditions: Meadow to corn to wheat cover, prevailing practice. 1/ Rain gage 108. 2/ Precipitation and runoff records began Jan. 1940. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCOTON, OHIO		WATERSHED 118		26.17						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
	RG 108			RG	108											
5-19	.30	T	6-18	1537	.00	.00	6-18	1536	.0000	.00						
5-21	.06	.00		1540	.40	.02		1540	.0206	T						
5-23	.09	.00		1543	1.80	.11		1542	.267	T						
5-24	1.55	.52		1545	3.90	.24		1544	.693	.02						
5-29	.32	.09		1547	2.70	.33		1546	1.42	.05						
5-30	.88	.26		1550	4.40	.55		1547	1.73	.08						
6-7	.09	.00		1552	3.30	.66		1548	2.00	.11						
6-8	.23	.06		1555	2.00	.76		1549	2.38	.15						
6-9	.20	T		1557	4.50	.91		1550	2.71	.19						
6-10	.73	.44		1600	1.80	1.00		1551	2.84	.24						
6-11	.46	.28		1605	.24	1.02		1554	2.46	.37						
6-12	.76	.50		1608	.20	1.03		1555	2.30	.41						
6-14	.07	.00		1610	.30	1.04		1557	2.54	.49						
6-15	.04	.00		1620	.12	1.06		1558	2.75	.53						
6-18	4/.44	5/.07						1600	2.42	.62						
								1601	2.08	.66						
								1602	1.79	.69						
								1603	1.48	.72						
								1604	1.22	.74						
								1605	1.04	.76						
								1606	.774	.77						
								1608	.366	.79						
								1610	.267	.80						
								1613	.214	.81						
								1615	.167	.82						
								1620	.0916	.83						
								1630	.0388	.84						
								1650	.0118	.85						
								1945	.0000	.86						
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 35 in. high.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.9763. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.17-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.17-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1536.																

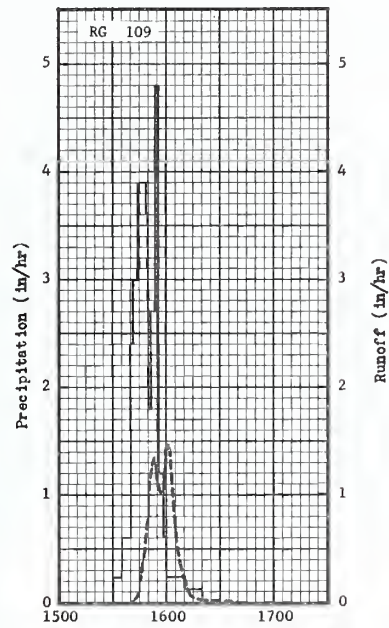
Cooperative Research Project of USDA and Ohio Agricultural Experiment Station



June 18, 1940

COSHOCOTON, OHIO WATERSHED 118

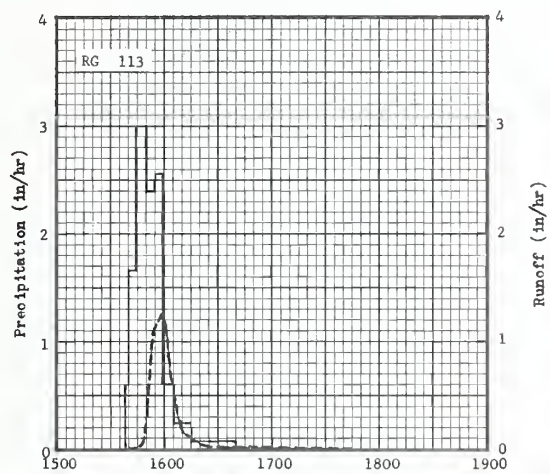
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO				AREA - 1.18 ACRES				WATERSHED 111		26.18	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963	P1/Q	2.06 .07	1.04 .82	5.80 2.63	2.92 .07	2.23 T	3.09 .21	2.94 .00	3.18 .00	.15 .00	.29 .00	1.72 .00	1.42 .00	26.84 3.80				
STA AV 2/P (39-63)	Q	2.71 .54	2.36 .62	3.25 .55	3.28 .31	3.89 .16	4.51 .38	4.10 .11	2.92 .06	2.62 .10	2.22 .03	2.39 .02	2.17 .21	36.42 3.09				
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																		
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL															
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS			
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1963	3-19	.30	3-19	.22	3-4	.30	3-4	.82	3-4	1.29	3-4	1.50	3-3	1.67	3-3	1.99		
MAXIMUMS FOR PERIOD OF RECORD																		
1939 to 1963	6-12 1957	3.82	6-12 1957	1.33	6-12 1957	1.42	6-28 1957	1.71	1-21 1959	2.03	1-26 1952	2.60	1-25 1952	2.61	1-19 1952	3.08		
NOTES: Watershed conditions: Cover of meadow to corn to wheat, improved practice plus mulch tillage. 1/ Rain gage 109. 2/ Precipitation and runoff records began Sept., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																		
1940 SELECTED RUNOFF EVENT							COSHOCTON, OHIO				WATERSHED 111				26.18			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF											
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)								
Event of June 18, 1940																		
5-19	RG 109 .33	.00	6-18	RG 109 1530	.00	.00	6-18	1540	.0000	.00								
5-21	.05	.00		1535	.24	.02		1543	.0294	T								
5-23	.16	.00		1540	.60	.07		1545	.107	T								
5-24	1.55	.09		1542	2.40	.15		1547	.291	.01								
5-29	.28	T		1544	3.00	.25		1548	.476	.02								
5-30	.93	.04		1548	3.90	.51		1549	.689	.02								
6-7	.08	.00		1550	3.60	.63		1550	.923	.04								
6-8	.28	.01		1552	1.80	.69		1552	1.23	.07								
6-9	.22	.00		1554	2.70	.78		1553	1.33	.10								
6-10	.64	.08		1556	4.80	.94		1554	1.26	.12								
6-11	.44	.05		1558	1.20	.98		1555	1.16	.14								
6-12	.76	.18		1600	.60	1.00		1556	1.03	.16								
6-14	.08	.00		1610	.24	1.04		1557	1.01	.17								
6-15	.08	.00		1620	.12	1.06		1558	1.07	.19								
6-18	4/.42	5/ T						1559	1.26	.21								
								1600	1.43	.23								
								1601	1.47	.26								
								1602	1.36	.28								
								1603	1.10	.30								
								1604	.866	.32								
								1605	.689	.33								
								1607	.438	.35								
								1609	.235	.36								
								1611	.116	.36								
								1613	.0690	.37								
								1615	.0445	.37								
								1622	.0102	.37								
								1645	.0000	.37								
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 35 in. high, clover and weeds 3 in. high, density of cover 65%.																		
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.1898. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.18-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.18-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1540.																		



June 18, 1940

COSHOCTON, OHIO WATERSHED 111

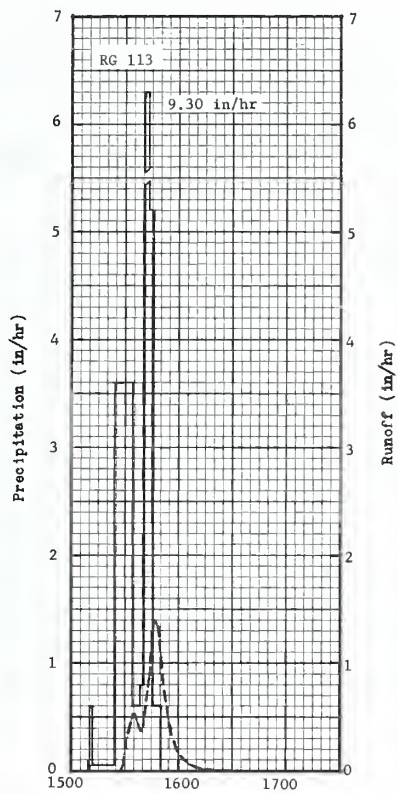
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO				WATERSHED 121				26.19		
							AREA - 1.42 ACRES										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963 P1	2.09	1.13	5.82	2.78	2.10	3.33	2.85	2.64	.10	.18	1.64	1.40	26.06				
Q	.00	.14	1.98	.01	.00	.00	.00	.00	.00	.00	.00	.00	2.13				
STA AV 2/P	2.70	2.25	3.13	3.19	3.70	4.48	4.41	2.87	2.60	2.15	2.31	2.07	35.86				
(39-63) Q	.21	.21	.30	.15	.05	.27	.22	.14	.09	.03	.01	.03	1.71				
MEAN P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80				
54 YR																	
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963	3-4	.29	3-4	.25	3-4	.46	3-4	1.03	3-4	1.33	3-4	1.38	3-3	1.66	3-1	1.87	
MAXIMUMS FOR PERIOD OF RECORD																	
1939 to	8-23	7.82	9-1	1.32	9-1	1.39	9-1	1.39	9-1	1.39	9-1	1.39	3-3	1.66	3-1	1.87	
1963	1944		1950		1950		1950		1950		1950		1963		1963		
NOTES: Watershed conditions: Cover of second year meadow, improved practice. 1/ Rain gage 113. 2/ Precipitation and runoff records began Apr., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																	
1940 SELECTED RUNOFF EVENT							COSHOCTON, OHIO				WATERSHED 121				26.19		
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
Event of June 18, 1940																	
	RG 113			RG	113												
5-19	.20	.00	6-18	1538	.00	.00	6-18	1541	.0000	.00							
5-21	.08	.00		1540	.60	.02		1545	.0085	T							
5-23	.12	.00		1544	1.65	.13		1546	.0173	T							
5-24	1.49	.05		1550	3.00	.43		1547	.0208	T							
5-29	.46	.00		1555	2.40	.63		1548	.0573	T							
5-30	.84	.08		1559	2.55	.80		1549	.175	T							
6-7	.12	.00		1605	.60	.86		1550	.229	.01							
6-8	.26	T		1615	.24	.90		1551	.364	.01							
6-9	.20	T		1640	.07	.93		1552	.675	.02							
6-10	.95	.06						1553	.936	.03							
6-11	.33	.02						1554	1.08	.05							
6-12	.59	.05						1557	1.19	.11							
6-14	.08	.00						1558	1.25	.13							
6-15	.03	.00						1559	1.25	.15							
6-18	4/.51	5/ T						1600	1.19	.17							
								1601	1.05	.19							
								1602	.859	.20							
								1603	.675	.22							
								1604	.553	.23							
								1605	.444	.23							
								1606	.364	.24							
								1607	.293	.25							
								1610	.155	.26							
								1615	.0824	.27							
								1620	.0466	.27							
								1630	.0208	.28							
								1645	.0085	.28							
								1745	.0000	.28							
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 30 in. high, clover and weeds 4 in. high, density of cover 55%.																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.4318. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.20-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.19-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1541.																	



June 18, 1940

COSHOCTON, OHIO WATERSHED 121

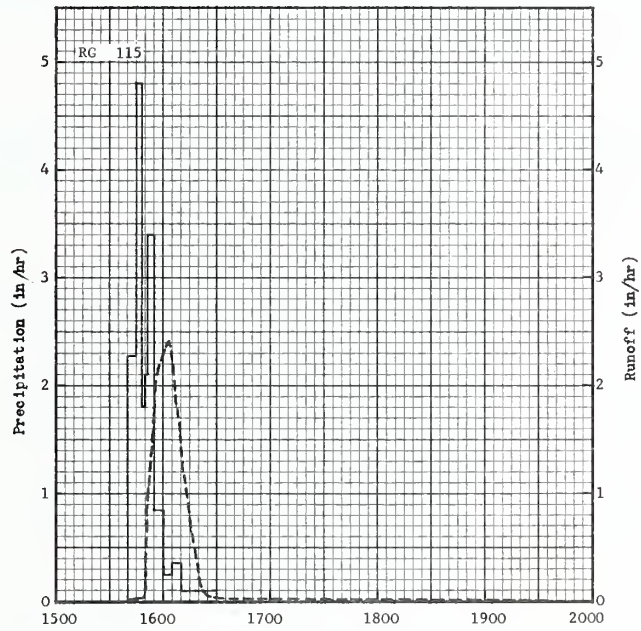
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCOTON, OHIO			AREA - 1.56 ACRES			WATERSHED 106		26.20	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1	2.09	1.13	5.82	2.78	2.10	3.33	2.85	2.64	.10	.18	1.64	1.40	26.06		
	Q	.01	.35	2.00	.02	.00	.03	.00	.00	.00	.00	.00	.00	2.41		
STA AV	2/P	2.70	2.25	3.13	3.19	3.70	4.48	4.41	2.87	2.60	2.15	2.31	2.07	35.86		
(39-63)	Q	.26	.28	.27	.13	.11	.35	.33	.22	.19	.02	.03	.09	2.28		
MEAN P	3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.29 E	3-4	.25 E	3-4	.46 E	3-4	1.03 E	3-4	1.33 E	3-4	1.38 E	3-4	1.66 E	3-3	1.74 E
MAXIMUMS FOR PERIOD OF RECORD																
1939 to	8-23	7.63	9-1	1.26	9-1	1.38	9-1	1.39	2-23	1.41	2-23	1.41	2-23	2.00	2-19	2.44
1963	1944		1950		1950		1950		1962		1962		1962		1962	
NOTES: Watershed conditions: Cover of second year meadow, prevailing practice. 1/ Rain gage 113. 2/ Precipitation and runoff records began Apr., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1941 SELECTED RUNOFF EVENT							COSHOCOTON, OHIO			WATERSHED 106			26.20			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME DF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME DF DAY	RATE (in/hr)	ACC. (inches)						
				Event of August 15, 1941 4/												
7-15	RG 113		8-15	RG	113		8-15									
	.30	.00		1510	.00	.00		1528	.0000	.00						
7-16	.61	T		1512	.60	.02		1529	.0522	T						
7-18	.38	.00		1524	.05	.03		1530	.133	T						
7-26	.14	.00		1534	3.60	.63		1531	.231	.01						
				1538	.60	.67		1532	.362	.01						
7-28	.17	.00		1541	.80	.71		1533	.451	.02						
7-29	.27	.00		1543	9.30	1.02		1534	.521	.02						
7-30	.42	.00		1546	5.20	1.28		1535	.521	.03						
8-11	.06	.00		1550	.60	1.32		1538	.388	.06						
8-12	.06	.00														
8-15	5/.88	.00						1539	.388	.06						
								1540	.420	.07						
								1541	.502	.08						
								1542	.636	.09						
								1543	.852	.10						
								1544	1.11	.12						
								1545	1.32	.14						
								1546	1.40	.16						
								1547	1.37	.18						
								1548	1.25	.20						
								1550	1.00	.24						
								1552	.718	.27						
								1554	.521	.29						
								1556	.331	.30						
								1559	.188	.32						
								1602	.102	.32						
								1606	.0472	.33						
								1611	.0189	.33						
								1615	.0077	.33						
								1619	.0039	.33						
								1625	.0003	.33						
								1630	.0000	.33						
Watershed conditions: In pasture, grass, alfalfa 8 in. high, weeds 6 in. high, density of cover 95%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.5730. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.20-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.20-1 AND 26.30-3. 4/ SUBSTITUTED FOR JUNE 18, 1940, FOR WHICH RUNOFF WAS SLIGHT, PEAK 0.0814 IN/HR. 5/ RAINFALL PRIOR TO 1203.																



August 15, 1941

COSHOCTON, OHIO WATERSHED 106

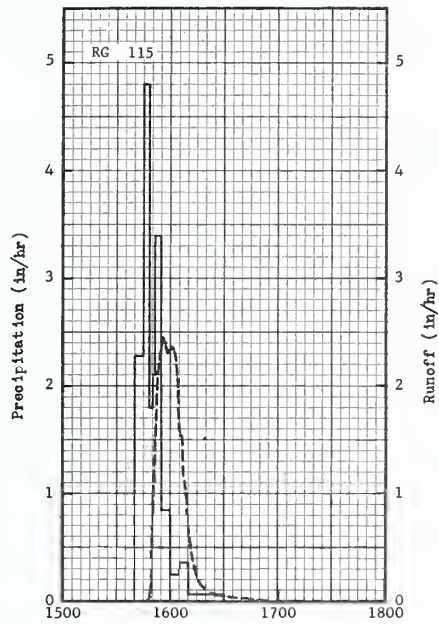
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO				AREA - 2.05 ACRES				WATERSHED 188		26.21	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963	P1/ Q	2.05 .00	1.08 .07	6.00 2.43	2.68 .00	2.19 .00	3.20 .00	3.12 .00	2.53 .00	.18 .00	.21 .00	1.71 .00	1.42 .00	26.37 2.50				
STA AV	2/P	2.59	2.25	3.10	3.15	3.87	4.36	4.18	2.97	2.60	2.14	2.30	2.06	35.57				
(39-63)	Q	.20	.19	.26	.12	.11	.32	.11	.20	.16	.06	.02	.03	1.78				
MEAN P	3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																		
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL															
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS			
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1963	3-4	.30	3-4	.28	3-4	.52	3-4	1.30	3-4	1.85	3-4	2.02	3-3	2.34	3-1	2.43		
MAXIMUMS FOR PERIOD OF RECORD																		
1939 to	8-23	3.06	9-1	1.84	9-1	2.07	9-1	2.08	9-1	2.08	9-1	2.08	3-3	2.34	3-1	2.43		
1963	1944		1950		1950		1950		1950		1950		1963		1963			
NOTES: Watershed conditions: Cover of second year meadow, improved practice plus minimum tillage. 1/ Rain gage 115. 2/ Precipitation and runoff records began Sept., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																		
1940 SELECTED RUNOFF EVENT							COSHOCTON, OHIO				WATERSHED 188				26.21			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF											
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)								
Event of June 18, 1940																		
	RG 115			RG	115													
5-19	.24	.02	6-18	1540	.00	.00	6-18	1541	.0000	.00								
5-21	.11	.00		1545	2.28	.19		1549	.0219	.00								
5-23	.10	.00		1548	4.80	.43		1550	.154	.00								
5-24	1.61	.43		1550	1.80	.49		1551	.674	.01								
5-29	.38	.13		1552	2.10	.56		1552	1.05	.02								
5-30	.79	.21		1555	3.40	.73		1554	1.59	.07								
6-7	.15	.00		1600	.84	.80		1556	2.04	.13								
6-8	.31	.22		1605	.24	.82		1557	2.15	.16								
6-9	.17	T		1610	.36	.85		1559	2.26	.24								
6-10	.77	.47		1630	.06	.87		1603	2.41	.39								
6-11	.47	.25						1605	2.19	.47								
6-12	.63	.45						1606	2.04	.50								
6-14	.08	.00						1607	1.84	.54								
6-15	.02	.00						1609	1.59	.59								
6-18	4/.59	5/.20						1611	1.25	.64								
								1612	1.15	.66								
								1613	1.00	.68								
								1614	.870	.69								
								1615	.749	.71								
								1616	.637	.72								
								1618	.415	.74								
								1619	.289	.74								
								1620	.206	.75								
								1621	.154	.75								
								1622	.0963	.75								
								1625	.0437	.75								
								1633	.0162	.76								
								1733	.0021	.76								
								1933	.0000	.76								
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 35 in. high, clover and weeds 3 in. high, density of cover 60%.																		
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.0671. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.21-4. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.21-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1541.																		



June 18, 1940

COSHOCTON, OHIO WATERSHED 188

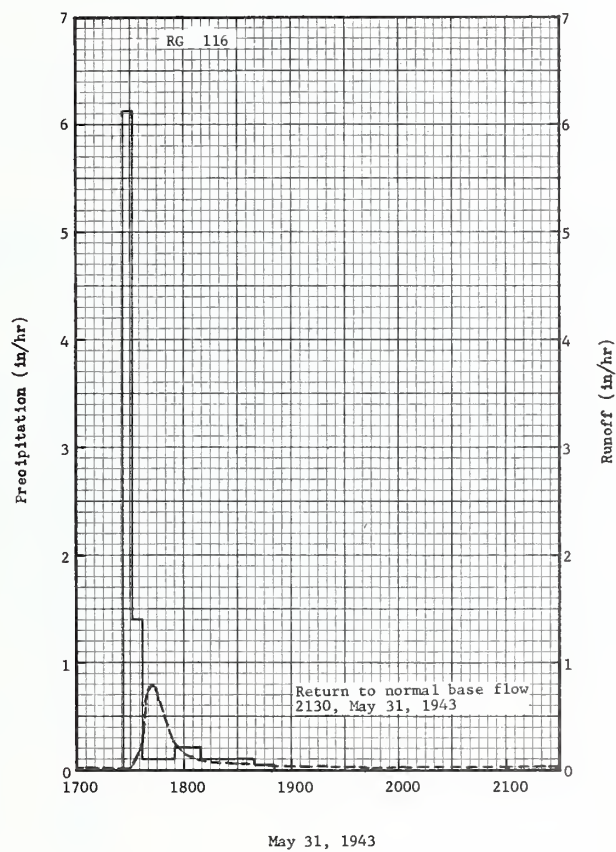
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO				AREA—7.40 ACRES		WATERSHED 185		26.23	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1	2.05	1.08	6.05	2.59	2.10	3.27	2.88	2.57	.15	.20	1.64	1.40	25.98		
	Q	.02	.81	4.65	.02	.00	.01	.00	.00	.00	.00	.00	.00	5.51		
	STA AV 2/P	2.72	2.25	3.17	3.19	3.78	4.23	4.12	2.93	2.58	2.11	2.31	2.10	35.49		
(39-63)	Q	.14	.24	.35	.15	.13	.33	.20	.14	.17	.06	.02	.05	1.98		
MEAN P 3/																
54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.34	3-4	.31	3-4	.59	3-4	1.60	3-4	2.42	3-4	2.88	3-3	3.55	3-1	4.11
MAXIMUMS FOR PERIOD OF RECORD																
1939 to	6-16	3.35	9-1	1.91	9-1	2.31	9-1	2.32	3-4	2.42	3-4	2.88	3-3	3.55	3-1	4.11
1963	1946		1950		1950		1950		1963		1963		1963			
NOTES: Watershed conditions: Cover of wheat and meadow strips, improved practice with strip cropping. 1/ Rain gage 115. 2/ Precipitation and runoff records began Sept., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT							COSHOCTON, OHIO				WATERSHED 185		26.23			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
	RG 115			RG	115											
5-19	.24	.01	6-18	1540	.00	.00	6-18	1547	.0000	.00						
5-21	.11	.00		1545	2.28	.19		1548	.0442	T						
5-23	.10	.00		1548	4.80	.43		1549	.260	T						
5-24	1.61	.45		1550	1.80	.49		1550	.749	.01						
5-29	.38	.11		1552	2.10	.56		1551	1.31	.03						
5-30	.79	.10		1555	3.40	.73		1552	1.61	.05						
6-7	.15	.00		1600	.84	.80		1553	2.06	.08						
6-8	.31	.11		1605	.24	.82		1554	2.28	.12						
6-9	.17	T		1610	.36	.85		1555	2.37	.16						
6-10	.77	.40		1630	.06	.87		1556	2.44	.20						
6-11	.47	.21						1557	2.40	.24						
6-12	.63	.41						1558	2.31	.28						
6-14	.08	.00						1601	2.37	.39						
6-15	.02	.00						1602	2.33	.43						
6-18	4/.59	5/.13						1603	2.10	.47						
								1604	1.90	.50						
								1605	1.58	.53						
								1606	1.54	.56						
								1607	1.18	.58						
								1608	.990	.60						
								1609	.796	.61						
								1610	.646	.62						
								1611	.515	.63						
								1612	.391	.64						
								1613	.300	.65						
								1617	.149	.66						
								1625	.0576	.67						
								1655	.0000	.68						
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 40 in. high, clover and weeds 4 in. high, density of cover 65%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 7.4616. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.23-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.23-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1547.																



June 18, 1940

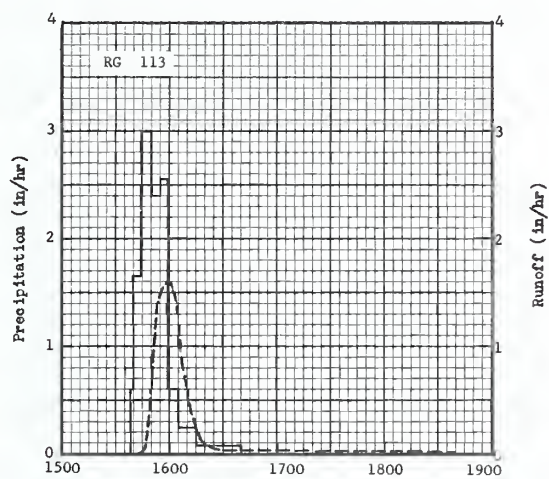
COSHOCOTON, OHIO WATERSHED 185

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO				WATERSHED 187				26.24	
MONTH		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/	2.08	1.13	5.82	2.87	2.13	3.34	3.02	2.90	.22	.21	1.70	1.50	26.92		
	C	.08	.66	3.94	.02	.01	.09	.00	T	.00	.00	.00	.00	4.80		
STA AV	2/P	2.74	2.30	3.22	3.22	3.86	4.43	4.32	2.88	2.79	2.18	2.35	2.10	36.39		
(41-63)	Q	.96	.74	1.10	.57	.25	.40	.15	.07	.13	.02	.03	.30	4.72		
MEAN P	3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.31	3-4	.30	3-4	.54	3-4	1.40	3-4	2.01	3-4	2.35	3-4	2.95	3-1	3.24
MAXIMUMS FOR PERIOD OF RECORD																
1941 TO	6-12	2.75	9-1	1.37	9-1	1.54	9-1	1.57	3-4	2.01	3-4	2.35	3-4	2.95	1-20	3.36
1963	1957		1950		1950		1950		1963		1963		1963		1959	
NOTES: Watershed conditions: Cover of corn and meadow strips, improved practice with strip cropping. 1/ Rain gage 116 2/ Precipitation and runoff records began Jan. 1941. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1943 SELECTED RUNOFF EVENT							COSHOCKTON, OHIO				WATERSHED 187				26.24	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of May 31, 1943 4/																
	RG 116		5-31	RG	116		5-31									
5-2	.32	.00		1726	.00	.00		1727	.0092	.00						
5-7	.48	.00		1731	6.12	.51		1731	.0213	T						
5-8	.36	.00		1737	1.40	.65		1732	.0428	T						
5-9	.23	.00		1755	.10	.68		1733	.108	T						
5-10	.05	.00		1809	.21	.73		1734	.153	T						
5-11	.31	.00		1839	.10	.78		1735	.194	.01						
5-12	.23	.01		1851	.05	.79		1736	.218	.01						
5-13	.01	.00						1737	.267	.02						
5-15	.11	.00						1738	.420	.02						
5-16	.10	.00						1739	.610	.03						
5-17	.59	.02						1740	.722	.04						
5-18	.00	.02						1741	.782	.05						
5-19	.32	.02						1742	.793	.07						
5-20	.00	.02						1743	.782	.08						
5-21	.10	.02						1744	.734	.09						
5-24	.09	.00						1746	.642	.11						
5-25	.81	.09						1748	.539	.13						
5-26	.06	.00						1750	.455	.15						
5-27	.03	.04						1751	.420	.16						
5-28	.00	.04						1752	.337	.16						
5-29	.00	.04						1754	.267	.17						
5-30	1.90	.31						1757	.205	.19						
5-31	2/.14	6/.17						1800	.153	.20						
								1805	.112	.21						
								1811	.0928	.22						
								1819	.0751	.23						
								1830	.0592	.24						
								1847	.0455	.26						
								1905	.0333	.27						
								1935	.0251	.28						
								2012	.0213	.30						
								2100	.0179	.31						
								2130	7/.0163	.32						
Watershed conditions: In corn and meadow strips of corn, wheat, meadow, meadow rotation (improved practice with contour strips). Corn planted May 29. Grass, clover and weeds 12 in. high.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 7.2601. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.24-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.24-1 AND 26.30-3. 4/ SUBSTITUTED FOR JUNE 18, 1940 FOR WHICH THE RECORD WAS LOST. 5/ RAINFALL PRIOR TO 1142. 6/ RUNOFF PRIOR TO 1727. 7/ NORMAL BASE FLOW.																



COSHOCTON, OHIO WATERSHED 187

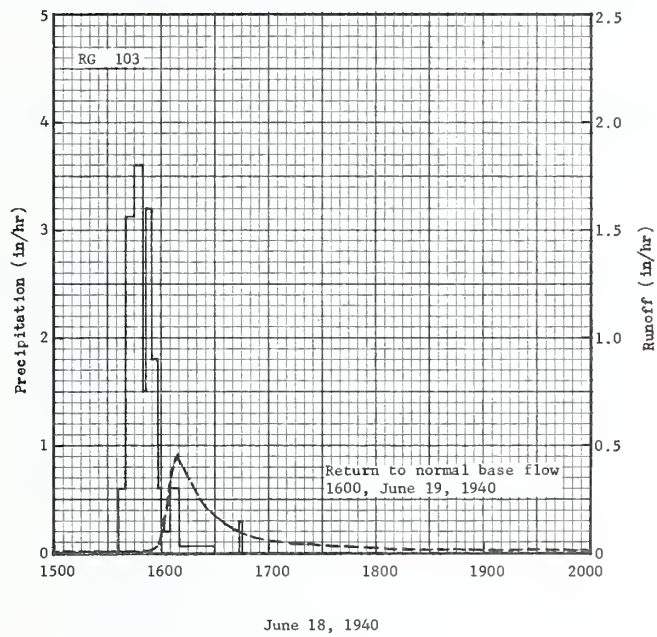
MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCOTON, OHIO						WATERSHED 192		26.25		
						AREA — 7.59 ACRES										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963	2.05	1.08	6.05	2.59	2.10	3.27	2.88	2.57	.15	.20	1.64	1.40	25.98			
FL	.08	.40	5.37	.02	.00	.01	.00	.00	.00	.00	.00	.00	5.88			
STA AV 2/P	2.72	2.25	3.17	3.19	3.78	4.23	4.12	2.93	2.58	2.11	2.31	2.10	35.49			
(39-63) Q	.50	.57	.60	.25	.17	.36	.19	.08	.13	.02	.04	.18	3.09			
MEAN P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		5 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-6	.37	3-6	.35	3-4	.59	3-4	1.44	3-4	2.11	3-4	2.53	3-4	3.85	3-3	4.72
	3-19															
MAXIMUMS FOR PERIOD OF RECORD																
1940 TO	6-16	4.60	6-16	1.85	9-1	2.02	9-1	2.04	3-4	2.11	3-4	2.53	3-4	3.85	3-3	4.72
1963	1946		1946		1950		1950		1963		1963		1963		1963	
NOTES: Watershed conditions: Cover of wheat to meadow, prevailing practice. 1/ Rain gage 128. 2/ Precipitation and runoff records began Sept., 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCOTON, OHIO						WATERSHED 192		26.25		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 113 4/			Event of June 18, 1940												
				RG	113 4/											
5-19	.20	.00	6-18	1538	.00	.00	6-18	1542	.0000	.00						
5-21	.08	.00		1540	.60	.02		1545	.0084	T						
5-23	.12	.00		1544	1.65	.13		1546	.0285	T						
5-24	1.49	.16		1550	3.00	.43		1547	.0849	T						
5-29	.46	.05		1555	2.40	.63		1548	.296	T						
5-30	.84	.14		1559	2.55	.80		1549	.465	.01						
6-7	.12	.00		1605	.60	.86		1550	.638	.02						
6-8	.26	.03		1615	.24	.90		1551	.866	.03						
6-9	.20	.00		1640	.07	.93		1552	1.08	.05						
6-10	.95	.26						1553	1.32	.07						
6-11	.33	.12						1555	1.49	.12						
6-12	.59	.22						1600	1.61	.25						
6-14	.08	.00						1602	1.51	.30						
6-15	.03	.00						1603	1.45	.32						
6-18	5/ .51	6/.05						1604	1.32	.35						
								1605	1.14	.37						
								1606	.996	.39						
								1607	.842	.40						
								1609	.638	.43						
								1611	.465	.45						
								1613	.323	.46						
								1615	.221	.47						
								1617	.131	.47						
								1620	.0718	.48						
								1626	.0348	.48						
								1632	.0195	.48						
								1644	.0084	.49						
								1840	.0000	.49						
Watershed conditions: In wheat of a corn, wheat, meadow, meadow rotation (prevailing practice). Wheat 45 in. high, clover and weeds 4 in. high, density of cover 50%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 7.6535. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.23-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.25-1 AND 26.30-3. 4/ SUBSTITUTED FOR RAIN GAGE 128, WHICH WAS NOT IN OPERATION. 5/ RAINFALL PRIOR TO 1130. 6/ RUNOFF PRIOR TO 1542.																



June 18, 1940

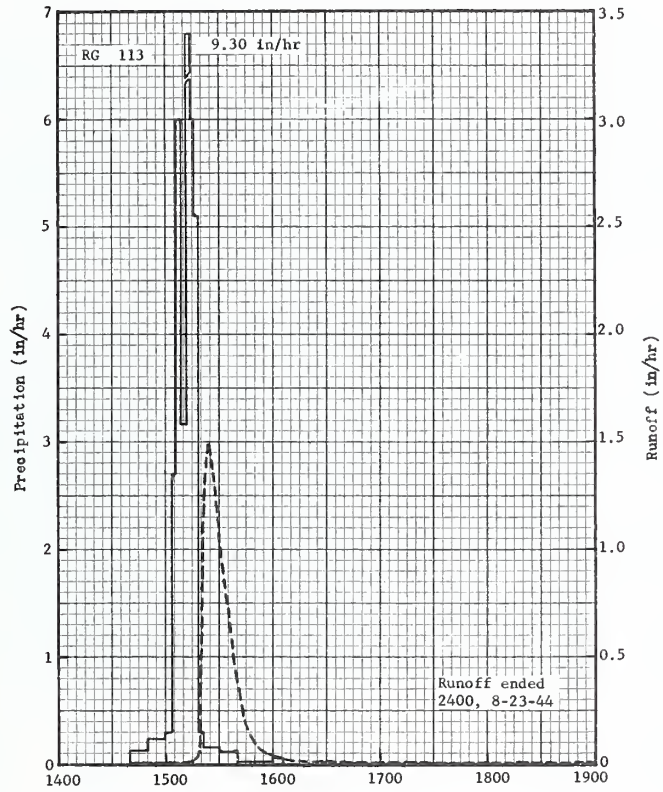
COSHOCTON, OHIO WATERSHED 192

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO				AREA - 43.6 ACRES				WATERSHED 172		26.26
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963	P1/	2.10	1.07	5.90	2.83	2.05	2.89	2.42	3.06	.17	.38	1.56	1.52	25.95			
	Q	.19	.59	5.72	1.14	.24	.75	.00	T	.00	.00	T	.00	8.63			
STA AV	2/P	2.74	2.40	3.27	3.25	3.75	4.36	4.31	2.85	2.50	2.21	2.35	2.13	36.12			
	(39-63) Q	1.30	1.56	2.55	2.30	1.44	.88	.32	.11	.13	.12	.25	.59	11.55			
MEAN P	3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
54 YR																	
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963	3-19	.14	3-4	.12	3-4	.24	3-4	.69	3-4	1.05	3-4	1.30	3-4	1.93	3-1	2.95	
MAXIMUMS FOR PERIOD OF RECORD																	
1939 to	6-12	2.64 E	6-12	1.07 E	6-12	1.23 E	6-12	1.38 E	1-26	1.48	1-26	1.95	1-26	2.34	4-3	3.22	
1963	1957		1957		1957		1957		1952		1952		1952		1957		
NOTES: Watershed conditions: Cover of 33% uneven age hardwoods, 67% pines planted in 1938. 1/ Rain gage 103. 2/ Precipitation and runoff records began Feb., 1939. All monthly amounts included in averages. 3/ Mean P based on 54 yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																	
1940 SELECTED RUNOFF EVENT							COSHOCKTON, OHIO				WATERSHED 172				26.26		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE	MO-DAY	RAINFALL (inches)	DATE	MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE	MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)					
Event of June 18, 1940																	
5-19		RG 103	6-18		RG	103		6-18									
5-20		.15			1536	.00	.00			1540	.0022	.000					
5-21		.00			1540	.60	.04			1546	.0032	T					
5-21		.01			1545	3.12	.30			1550	.0054	T					
5-22		.00			1550	3.60	.60			1553	.0089	.001					
5-23		.11			1552	1.50	.65			1555	.0132	.001					
5-24		1.62			1555	3.20	.81			1557	.0209	.002					
5-25		.00			1558	1.80	.90			1559	.0396	.002					
5-26		.00			1600	.60	.92			1600	.0926	.004					
5-27		.00			1602	.30	.93			1602	.138	.008					
5-28		.00			1605	.20	.94			1604	.226	.013					
5-29		.45			1610	.60	.99			1606	.364	.024					
5-30		.78			1630	.06	1.01			1607	.394	.030					
5-31		.00			1643	.00	1.01			1608	.440	.037					
6-1		.00			1645	.30	1.02			1610	.441	.052					
6-2		.00								1612	.405	.066					
6-3		.00								1614	.369	.080					
6-4		.00								1616	.337	.092					
6-5		.00								1619	.291	.107					
6-5		.00								1622	.246	.120					
6-7		.12								1626	.203	.135					
6-8		.26								1633	.150	.155					
6-9		.32								1640	.111	.170					
6-10		1.01								1652	.0728	.188					
6-11		.47								1706	.0489	.202					
6-12		.62								1720	.0396	.212					
6-13		.00								1735	.0316	.221					
6-14		.06								1810	.0209	.236					
6-15		T								1850	.0157	.248					
6-16		.00								1955	.0118	.263					
6-17		.00								2145	.0086	.281					
6-18		4/.43								2400	.0070	.298					
		5/.029								0700	.0058	.343					
										1600	6/.0032	.384					
Watershed conditions: One-third of area in hardwoods, 2/3 reforested to pines. Hardwoods up to 70 ft high, shrubs 18 in. high, herbs 12 in. high. Pines on reforested area 18 in high																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 43.963. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.26-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.26-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1540. 6/ NORMAL BASE FLOW.																	



COSHOCTON, OHIO WATERSHED 172

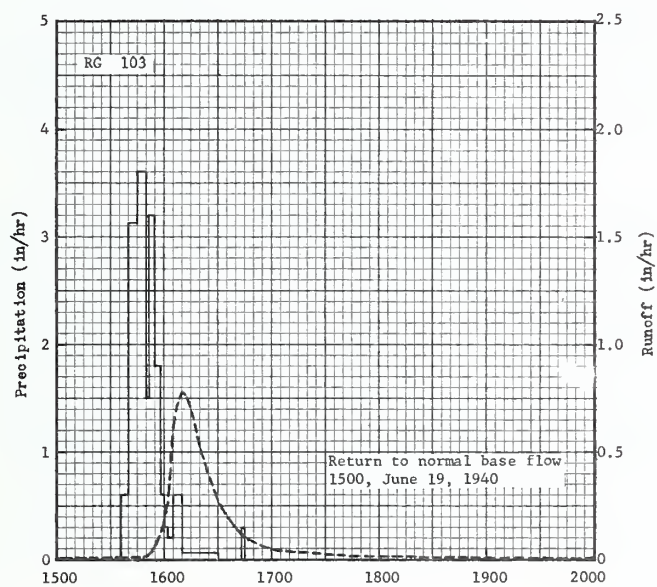
MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO		AREA — 29.0 ACRES		WATERSHED 169		26.27				
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/	2.09	1.13	5.82	2.78	2.10	3.33	2.85	2.64	.10	.18	1.64	1.40	26.06			
Q	.21	.14	3.24	.16	.04	.15	T	.02	.00	.00	.00	.00	3.96			
STA AV 2/P	2.69	2.25	3.13	3.17	3.80	4.38	4.31	2.94	2.66	2.05	2.38	2.09	35.85			
(40-63) Q	.94	.99	1.40	.96	.50	.56	.28	.18	.17	.04	.10	.38	6.50			
MEAN P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTEO TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTEO TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		6 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.25 E	3-4	.24 E	3-4	.42 E	3-4	1.07 E	3-4	1.37 E	3-4	1.70 E	3-4	1.92 E	3-3	2.34 E
MAXIMUMS FOR PERIOD OF RECORD																
1940 to	6-12	2.59	9-1	1.70	9-1	2.00	9-1	2.03	9-1	2.04	1-21	2.12 E	1-21	2.37 E	1-20	2.68 E
1963	1957		1950		1950		1950		1950		1959		1959		1959	
NOTES: Watershed conditions: Cover of 6% hardwoods, 6% reforested, 48% grassland, 34% cultivated, 6% miscellaneous, contour strip cropped. 1/ Rain gage 113. 2/ Precipitation and runoff records began Jan. 1940. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1944 SELECTED RUNOFF EVENT						COSHOCTON, OHIO		WATERSHED 169		26.27						
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 113			Event of August 23, 1944 4/												
7-26	.11	.00	8-23	RG	113		8-23	1440	.0000	.000						
7-28	.36	.00		1440	.00	.00		1512	.0010	T						
7-29	.18	.00		1450	.12	.02		1516	.0084	T						
8-5	1.10	.02		1500	.24	.06		1518	.0489	.001						
				1504	.30	.08										
8-14	.08	.00		1506	2.70	.17		1520	.383	.008						
8-16	.91	.00		1508	6.00	.37		1521	.869	.019						
8-17	.30	.00		1512	3.15	.58		1522	1.21	.036						
8-21	.18	.00		1514	9.30	.89		1524	1.48	.081						
8-22	.14	.00		1516	6.00	1.09		1528	1.21	.171						
				1518	5.10	1.26		1532	.899	.241						
				1522	.30	1.28		1536	.619	.291						
				1530	.15	1.30		1540	.383	.325						
				1540	.12	1.32		1544	.201	.344						
				1606	.02	1.33		1550	.0906	.359						
								1556	.0489	.366						
								1600	.0355	.369						
								1604	.0256	.371						
								1612	.0149	.373						
								1620	.0103	.375						
								1628	.0071	.376						
								1656	.0028	.378						
								1752	.0010	.380						
								1840	.0005	.380						
								1900	.0006	.381						
								1912	.0005	.381						
								2020	.0001	.381						
								2400	.0000	.381						
Watershed conditions: Mixed cover under improved practice. 35% of area in corn 90 in. high, 6% in wheat 36 in. high, 32% in meadow 14 in. high, 8% in pasture 10 in. high, 3% in protected woodland, 4% reforested, 4% idle, 8% farmstead.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 29.241. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.27-6. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.27-1 AND 26.30-3. 4/ SUBSTITUTED FOR JUNE 18, 1940, FOR WHICH THE RECORD WAS LOST.																



August 23, 1944

COSHOCOTON, OHIO WATERSHED 169

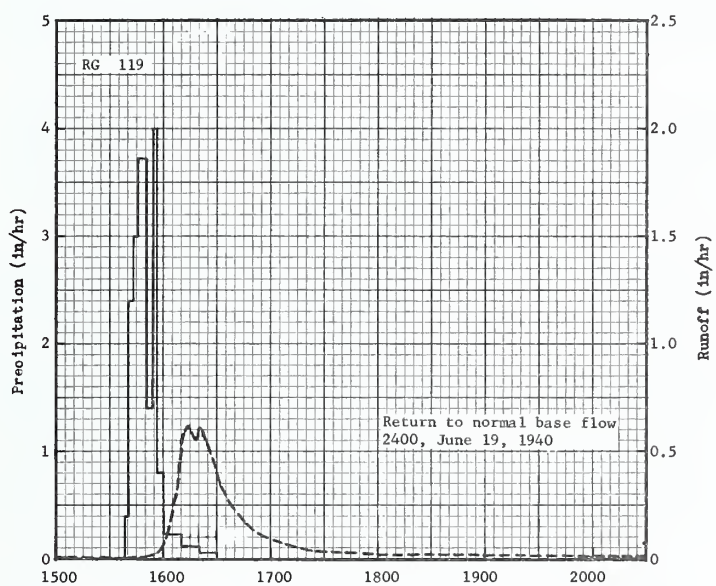
MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO AREA - 75.6 ACRES						WATERSHED 177		26.28		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/ Q	2.10 .14	1.07 .47	5.90 4.53	2.83 .43	2.05 .05	2.89 .17	2.42 T	3.06 .02	.17 .00	.38 .00	1.56 T	1.52 .00	25.95 5.81			
STA AV 2/P (40-63) Q	2.74 1.16	2.33 1.16	3.26 1.70	3.23 1.17	3.86 .60	4.29 .64	4.24 .29	2.92 .14	2.56 .14	2.09 .06	2.43 .17	2.16 .54	36.11 7.77			
MEAN P 3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.23	3-4	.22	3-4	.43	3-4	1.12	3-4	1.77	3-4	2.06	3-4	2.48	3-3	2.93
MAXIMUMS FOR PERIOD OF RECORD																
19 40 TO 19 63	6-12 1957	3.14	6-12 1957	1.33	9-1 1950	1.55	9-1 1950	1.63	3-4 1963	1.77	3-4 1963	2.06	3-4 1963	2.48	3-3 1963	2.93
NOTES: Watershed conditions: Cover of 4% hardwoods, 6% reforested, 67% grassland, 17% cultivated, 6% miscellaneous, contour strip cropped. 1/ Rain gage 103. 2/ Precipitation and runoff records began Jan. 1940. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCTON, OHIO						WATERSHED 177		26.28		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
5-19	RG 103		6-18	RG	103		6-18	1538	.0019	.000						
5-20	.15	.000		1536	.00	.00		1546	.0043	T						
5-21	.00	.000		1540	.60	.04		1549	.0070	.001						
5-22	.01	.000		1545	3.12	.30		1549	.0070	.001						
	.00	.000		1550	3.60	.60		1551	.0153	.001						
5-23	.11	T		1552	1.50	.65		1553	.0338	.002						
5-24	1.62	.050		1555	3.20	.81		1555	.0617	.003						
5-25	.00	.013		1558	1.80	.90		1557	.0942	.006						
5-26	.00	.007		1600	.60	.92		1559	.140	.010						
5-27	.00	.004		1602	.30	.93		1601	.251	.016						
5-28	.00	.002		1605	.20	.94		1603	.381	.027						
5-29	.45	.011		1610	.60	.99		1605	.573	.043						
5-30	.78	.097		1630	.06	1.01		1608	.751	.077						
5-31	.00	.051		1643	.00	1.01		1610	.776	.102						
6 -1	.00	.036		1645	.30	1.02		1615	.684	.163						
6 -2	.00	.028						1620	.528	.213						
6 -3	.00	.022						1624	.408	.244						
6 -4	.00	.016						1628	.305	.268						
6 -5	.00	.010						1632	.235	.286						
6 -6	.00	.007						1639	.154	.308						
6 -7	.12	.008						1647	.0942	.325						
6 -8	.26	.009						1655	.0652	.335						
6 -9	.32	.012						1705	.0441	.344						
6-10	1.01	.139						1720	.0277	.353						
6-11	.47	.081						1800	.0116	.364						
6-12	.62	.145						1900	.0065	.373						
6-13	.00	.051						2400	.0030	.393						
6-14	.06	.043					6-19	0930	.0024	.419						
6-15	T	.037						1500	6/.0018	.431						
6-16	.00	.027														
6-17	.00	.021														
6-18	4/.43	5/.039														
Watershed conditions: Mixed cover under prevailing practice. 19% of area in corn 30 in. high, 2% in wheat 36 in. high, 20% in oats 16 in. high, 9% in meadow 13 in. high, 28% in pasture 9 in. high, 3% in protected woodland, 8% reforested, 9% farmstead, 2% roads.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 76.231. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.28-7. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.28-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1538. 6/ NORMAL BASE FLOW.																



June 18, 1940

COSHOCTON, OHIO WATERSHED 177

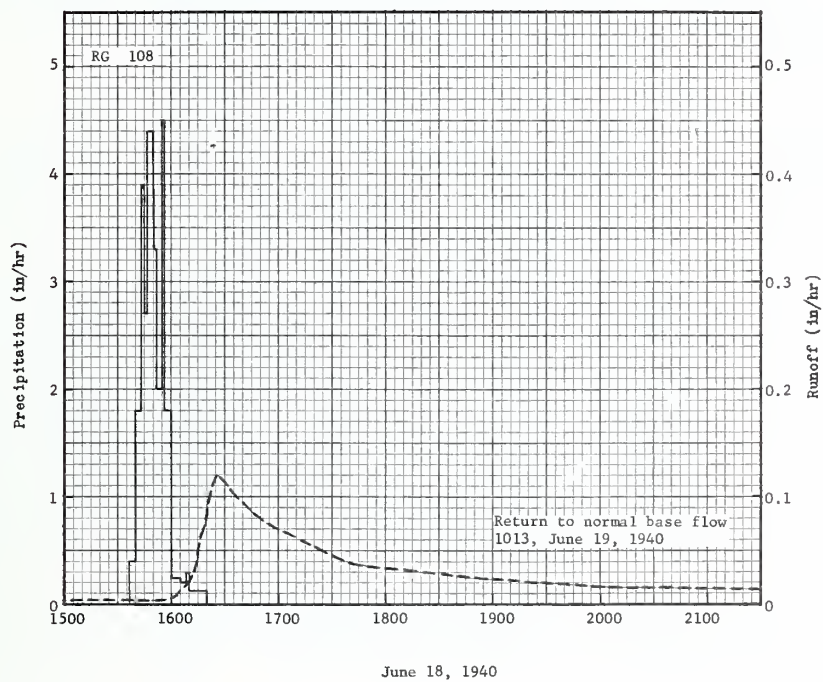
MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO AREA — 74.2 ACRES						WATERSHED 183		26.29		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1	2.11	1.21	6.11	2.54	2.12	2.79	2.98	2.74	.15	.23	1.65	1.47	26.10		
	Q	.42	.45	4.45	.42	.13	.53	.01	.06	.00	.00	.00	.00	6.47		
STA AV (38-63)	2/P	2.78	2.53	3.39	3.36	3.73	4.26	4.07	2.82	2.61	2.06	2.42	2.16	36.19		
	Q	1.48	1.51	2.10	1.58	.95	.80	.39	.21	.19	.09	.25	.69	10.24		
MEAN P 3/54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.28	3-4	.27	3-4	.50	3-4	1.07	3-4	1.48	3-4	1.73	3-4	2.29	3-3	2.71
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963	6-16 1946	2.58	6-16 1946	1.37	9-1 1950	1.58	6-16 1946	1.73	6-16 1946	1.93	6-16 1946	2.04	3-4 1963	2.29	4-21 1961	3.10
NOTES: Watershed conditions: Cover of 14% woodland, 57% grassland, 29% cultivated, prevailing practice except for 9% of area strip cropped. 1/ Rain gage 119. 2/ Precipitation and runoff records began Mar., 1938. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCTON, OHIO						WATERSHED 183		26.29		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
5-19	RG 119 .36	.006	6-18	RG 119 1538	.00	.00	6-18	1539	.0013	.000						
5-20	.00	.003		1541	.40	.02		1549	.0047	.001						
5-21	.13	.003		1543	2.40	.10		1555	.0102	.002						
5-22	.00	.002		1546	3.00	.25		1559	.0410	.006						
5-23	.11	.003		1551	3.72	.56		1602	.0981	.017						
5-24	1.61	.208		1554	1.40	.63		1606	.263	.028						
5-25	.00	.037		1557	4.00	.83		1608	.388	.044						
5-26	.00	.021		1600	.80	.87		1610	.543	.082						
5-27	.00	.015		1610	.24	.91		1614	.612	.121						
5-28	.00	.012		1620	.12	.93		1618	.551	.150						
5-29	.30	.012		1630	.06	.94		1621	.604	.160						
5-30	.87	.139						1622	.573	.196						
5-31	.00	.076						1626	.499	.238						
6-1	.00	.041						1632	.342	.267						
6-2	.00	.030						1638	.241	.293						
6-3	.00	.022						1646	.159	.311						
6-4	.00	.015						1654	.110	.333						
6-5	.00	.012						1710	.0652	.345						
6-6	.00	.010						1723	.0424							
6-7	.15	.012						1731	.0361	.350						
6-8	.36	.019						1747	.0281	.359						
6-9	.21	.021						1819	.0202	.372						
6-10	.67	.064						1859	.0142	.383						
6-11	.43	.067						1959	.0108	.395						
6-12	.73	.147						2139	.0079	.411						
6-13	.00	.072						2400	.0055	.426						
6-14	.11	.034					6-19	2400	6/.0019	.500						
6-15	.02	.029														
6-16	.00	.019														
6-17	.00	.015														
6-18	4/.56	5/.029														
Watershed conditions: Mixed cover under prevailing practice. 15% of area in corn 30 in. high, 7% in wheat 36 in. high, 14% in oats 16 in. high, 20% in meadow cut for hay, 30% in pasture 10 in. high, 10% in pastured woodland, 3% in protected woodland, 1% in roads																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 74.817. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.29-4. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.29-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1130. 5/ RUNOFF PRIOR TO 1539. 6/ NORMAL BASE FLOW.																



June 18, 1940

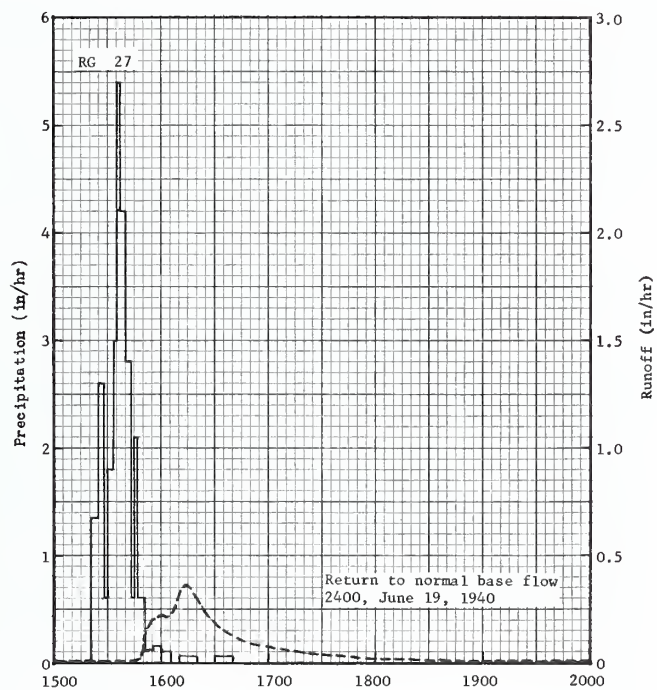
COSHOCTON, OHIO WATERSHED 183

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO				WATERSHED 196				26.30	
							AREA — 303 ACRES									
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
YEAR																
1963	2.08	1.14	6.00	2.90	2.15	3.33	3.01	2.94	.20	.24	1.67	1.50	27.16			
PL	.61	.40	6.73	1.23	.36	.84	.09	.10	.03	.03	.06	.05	10.53			
STA AV 2/P	2.75	2.50	3.48	3.39	3.81	4.68	4.32	2.88	2.62	2.24	2.42	2.20	37.29			
(37-63) Q	1.87	2.00	2.84	2.37	1.45	1.23	.63	.31	.26	.21	.41	.98	14.56			
MEAN P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.30	3-4	.29	3-4	.53	3-4	1.38	3-4	2.02	3-4	2.40	3-4	3.19	3-3	3.97
MAXIMUMS FOR PERIOD OF RECORD																
1937 TO	6-12	3.72	6-12	1.31 E	6-12	1.44 E	6-16	1.63	1-21	2.06	1-21	2.92	1-20	3.21	4-21	4.38
1963	1957		1957		1957		1946		1959		1959		1959		1961	
NOTES: Watershed conditions: Cover of 27% woodland, 50% grassland, 19% cultivated, 4% miscellaneous, prevailing practice. 1/ Arithmetic average rain gages 108 and 116. 2/ Precipitation and runoff records began May, 1937. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940							COSHOCTON, OHIO				WATERSHED 196				26.30	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE	MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE	MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE	MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
Event of June 18, 1940																
5-19		2 RG 4/	.31	6-18		RG	108	.00	6-18		1549	.0033	.0000			
5-20			.0154			1537	.00	.02			1601	.0050	.0007			
5-21			.0124			1540	.40	.11			1603	.0073	.0009			
5-22			.0109			1543	1.80	.24			1605	.0118	.0013			
			.0089			1545	3.90	.33			1609	.0177	.0022			
5-23			.0093			1547	2.70	.55			1611	.0245	.0029			
5-24			.3034			1550	4.40	.66			1613	.0315	.0039			
5-25			.0828			1552	3.30	.76			1615	.0445	.0052			
5-26			.0508			1555	2.00	.91			1617	.0642	.0070			
5-27			.0466			1557	4.50	1.00			1619	.0766	.0093			
5-28			.0452			1600	1.80	1.02			1621	.0933	.0122			
5-29			.0445			1605	.24	1.03			1625	.120	.0193			
5-30			.1430			1608	.20	1.04			1635	.101	.0377			
5-31			.1920			1610	.30	1.06			1645	.0861	.0533			
6-1			.1025			1620	.12				1653	.0750	.0640			
6-2			.0607								1705	.0655	.0780			
6-3			.0406								1715	.0583	.0884			
6-4			.0270								1725	.0498	.0974			
6-5			.0205								1745	.0363	.1117			
6-6			.0177													
6-7			.0183								1845	.0222	.1400			
6-8			.0248								2005	.0158	.1648			
6-9			.0230								2125	.0118	.1830			
6-10			.0771								2400	.0077	.2073			
6-11			.0870								0405	.0055	.2342			
6-12			.1689								1013	7/.0048	.2643			
6-13			.1251													
6-14			.0642													
6-15			.0546													
6-16			.0466													
6-17			.0418													
6-18		5/.52	6/.0444													
Watershed conditions: Mixed cover under prevailing practice. 6% of area in corn 30 in. high, 12% in wheat 36 in. high, 4% in oats 16 in. high, 0.5% in soybeans, 21% in meadow 13 in. high, 22% in pasture 10 in. high, 9% in pastured woodland, 17% in protected woodland, 1% idle, 4.5% farmstead, 3% roads.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 305.52. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.30-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.30-1 AND 26.30-3. 4/ ARITHMETIC AVERAGE RAIN GAGES 108 AND 116. 5/ RAINFALL PRIOR TO 1130. 6/ RUNOFF PRIOR TO 1549. 7/ NORMAL BASE FLOW.																



COSHOCTON, OHIO WATERSHED 196

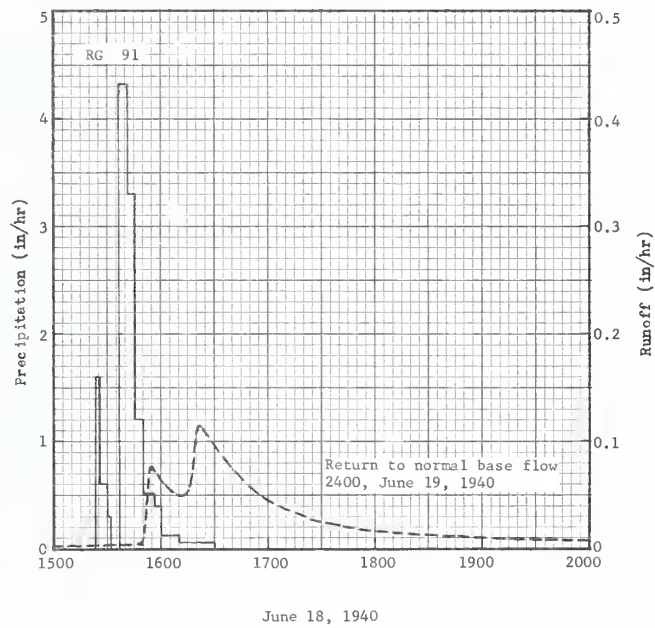
MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCOTON, OHIO LITTLE MILL CREEK WATERSHED 10						26.31				
AREA—122 ACRES																
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.07 .19	1.17 .32	6.09 4.87	3.02 1.23	2.19 .29	3.26 .70	2.51 .12	2.99 .12	.29 .05	.29 .03	1.62 .02	1.56 .02	27.06 7.96		
STA AV 2/P (39-63) Q		2.83 1.24	2.56 1.40	3.39 1.86	3.41 1.56	3.69 .88	4.45 .78	4.23 .40	2.85 .17	2.48 .13	2.27 .16	2.47 .25	2.30 .64	36.93 9.47		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-6	.33	3-4	.20 E	3-4	.37 E	3-4	1.00 E	3-4	1.40 E	3-4	1.70 E	3-4	2.10 E	3-1	2.94 E
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1963	6-28 1957	1.76 E	6-28 1957	.98 E	6-28 1957	1.39 E	6-28 1957	1.80 E	6-28 1957	1.99 E	6-28 1957	2.14 E	6-28 1957	2.25 E	3-1 1963	2.94 E
NOTES: Watershed conditions: Cover of 21% cropland, 48% grassland, 25% woodland, 6% miscellaneous, conservation practice. 1/ Rain gage 27. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCOTON, OHIO WATERSHED 10						26.31				
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
5-19	RG 27 .16	.0024	6-18	RG 27 1521	.00	.00	6-18	1520	.0008	.0000						
5-20	.00	.0024		1525	1.35	.09		1540	.0022	.0004						
5-21	T .0024			1528	2.60	.22		1544	.0050	.0007						
5-22	.00	.0024		1530	.60	.24		1546	.0084	.0009						
5-23	.18	.0024		1533	1.80	.33		1547	.0117	.0011						
5-24	1.61	.1040		1535	3.00	.43		1548	.0210	.0014						
5-25	.00	.0177		1537	5.40	.61		1549	.0350	.0019						
5-26	.00	.0072		1540	4.20	.82		1550	.0543	.0027						
5-27	.00	.0048		1543	2.80	.96		1552	.156	.0060						
5-28	.00	.0048		1545	.60	.98		1555	.207	.0156						
5-29	.44	.0075		1547	2.10	1.05		1600	.229	.0337						
5-30	.96	.0953		1551	.60	1.09		1604	.224	.0489						
5-31	.02	.0481		1556	.12	1.10		1608	.254	.0649						
6-1	.00	.0140		1600	.15	1.11		1610	.310	.0742						
6-2	.00	.0089		1606	.10	1.12		1613	.368	.0912						
6-3	.00	.0048		1610	.00	1.12		1616	.349	.1091						
6-4	.00	.0048		1620	.06	1.13		1623	.259	.1446						
6-5	.00	.0048		1630	.00	1.13		1629	.192	.1669						
6-6	.00	.0048		1640	.06	1.14		1635	.150	.1840						
6-7	.05	.0024						1645	.104	.2047						
6-8	.54	.0162						1655	.0798	.2197						
6-9	.66	.0387						1720	.0419	.2443						
6-10	.77	.1990						1800	.0245	.2658						
6-11	.55	.3058						1840	.0173	.2794						
6-12	.26	.0846						2000	.0113	.2980						
6-13	.00	.0411						2200	.0077	.3165						
6-14	.06	.0198						2400	.0060	.3298						
6-15	.03	.0144						0500	.0041	.3546						
6-16	.00	.0108						1130	.0028	.3772						
6-17	.00	.0096						2400	6/.0014	.4001						
6-18	4/.40	5/.0127														
Watershed conditions: Mixed cover under prevailing practice. 7% of area in corn 30 in. high, 14% in wheat 36 in. high, 34% in meadow 13 in. high, 11% in pasture 10 in. high, 15% in pastured woodland, 10% in protected woodland, 3% idle, 4% farmstead, 2% roads.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 123.02. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.31-4. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.31-1 AND 26.37-2. 4/ RAINFALL PRIOR TO 1330. 5/ RUNOFF PRIOR TO 1520. 6/ NORMAL BASE FLOW.																



June 18, 1940

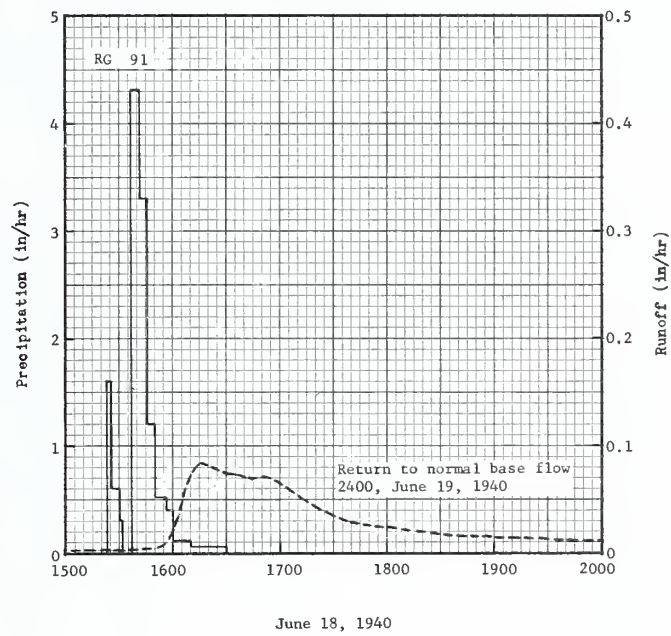
COSHOCOTON, OHIO WATERSHED 10

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO LITTLE MILL CREEK AREA—349 ACRES						WATERSHED 5		26.32		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.06 .43	1.13 .27	6.29 5.12	3.38 1.32	2.13 .26	3.25 .55	3.72 .05	2.61 .04	.43 .01	.23 T	1.46 T	1.46 T	28.15 8.05		
STA AV 2/P (40-63) Q		2.83 1.51	2.48 1.55	3.38 2.23	3.39 1.82	3.77 1.12	4.34 .88	4.29 .48	2.88 .21	2.57 .13	2.19 .18	2.53 .32	2.33 .74	36.98 11.17		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.30	3-4	.26	3-4	.47	3-4	1.04	3-4	1.58	3-4	1.86	3-4	2.43	3-4	3.00
MAXIMUMS FOR PERIOD OF RECORD																
1940 TO 1963	6-28 1957	1.09	6-28 1957	.77	6-28 1957	1.04	6-28 1957	1.38	6-28 1957	1.584/ 1959	1-21 1959	2.31	1-20 1959	2.64	1-20 1959	3.04
NOTES: Watershed conditions: Cover of 20% cropland, 54% grassland, 23% woodland, 3% miscellaneous, improved practice. 1/ Rain gage 91. 2/ Precipitation and runoff records began Jan. 1940. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio. 4/ Equalled on Mar. 4, 1963.																
1940 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO						WATERSHED 5		26.32		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
5-19	RG 91 .18	.0133	6-18	RG 1523	.00	.00	6-18	1528	.0020	.0000						
5-20	.00	.0119		1526	1.60	.08		1540	.0035	.0006						
5-21	T .0078	.0078		1530	.60	.12		1544	.0046	.0009						
5-22	.00	.0063		1532	.30	.13		1548	.0054	.0012						
5-23	.15	.0088		1537	.00	.13		1550	.0078	.0014						
5-24	1.61	.1258		1542	4.32	.49		1552	.0344	.0021						
5-25	.00	.0566		1546	3.30	.71		1554	.0767	.0040						
5-26	.00	.0365		1550	1.20	.79		1556	.0730	.0065						
5-27	.00	.0283		1557	.51	.65		1600	.0625	.0110						
5-28	.00	.0227		1600	.40	.87		1604	.0563	.0149						
5-29	.42	.0222		1610	.12	.89		1612	.0497	.0220						
5-30	1.00	.0991		1630	.06	.91		1616	.0537	.0255						
5-31	.02	.0873						1620	.0995	.0306						
6-1	.00	.0604						1622	.114	.0341						
6-2	.00	.0488						1624	.109	.0378						
6-3	.00	.0413						1632	.0906	.0512						
6-4	.00	.0354						1640	.0730	.0621						
6-5	.00	.0277						1648	.0591	.0709						
6-6	.00	.0235						1700	.0449	.0813						
6-7	.09	.0240						1712	.0352	.0893						
6-8	.82	.0290						1728	.0257	.0974						
6-9	.70	.0541						1740	.0214	.1021						
6-10	.80	.1408						1800	.0163	.1084						
6-11	.60	.2113						1820	.0138	.1134						
6-12	.34	.1385						1844	.0111	.1184						
6-13	.00	.1006						1920	.0092	.1245						
6-14	.06	.0682						2008	.0078	.1313						
6-15	.07	.0572						2120	.0066	.1399						
6-16	.00	.0446						2400	.0052	.1557						
6-17	.00	.0373						6-19	2400	7/.0029	.2422					
6-18	5/.38	6/.0293														
Watershed conditions: Mixed cover under prevailing practice. 7% of area in corn 30 in. high, 0.2% in potatoes, 12% in wheat 36 in. high, 3% in oats 16 in. high, 0.8% in soybeans, 24% in meadow 13 in. high, 24.5% in pasture 10 in. high, 7% in pastured woodland, 14.5% in protected woodland, 1% reforested, 1.5% idle, 3% farmsteads, 1.5% in roads.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 351.91. FOR REVISED MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, P. 26.32-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.32-1 AND 26.37-2. 5/ RAINFALL PRIOR TO 1300. 6/ RUNOFF PRIOR TO 1528. 7/ NORMAL BASE FLOW.																



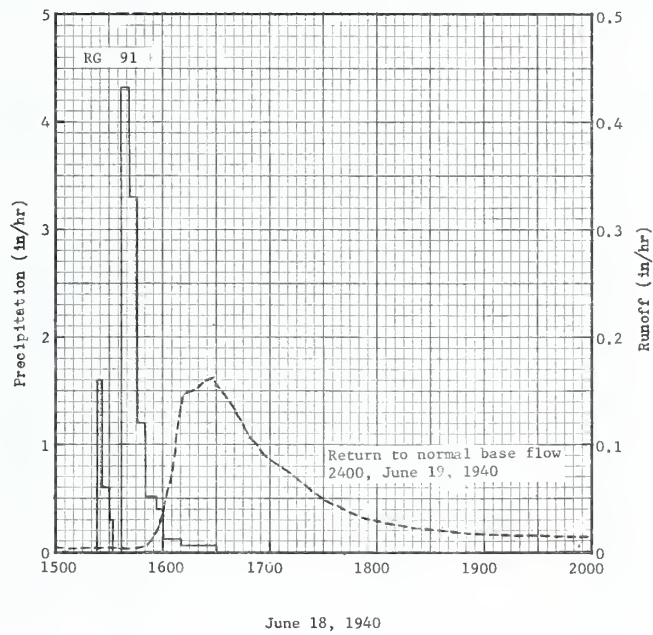
COSHOCOTON, OHIO WATERSHED 5

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCOTON, OHIO LITTLE MILL CREEK WATERSHED 92 AREA--920 ACRES (1.44 SQ. MILES)							26.33				
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963 P 1/ Q	2.06 .52	1.13 .34	6.29 6.18	3.38 1.65	2.13 .34	3.25 .75	3.72 .08	2.61 .05	.43 .00	.23 .00	1.46 .01	1.46 .01	28.15 9.93					
	2.81 1.62	2.56 1.78	3.39 2.39	3.41 1.99	3.68 1.15	4.40 .94	4.33 .48	2.85 .20	2.51 .13	2.28 .19	2.46 .38	2.29 .85	36.97 12.10					
	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80					
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																		
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL															
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS			
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1963	3-19	.25	3-4	.23	3-4	.44	3-4	1.07	3-4	1.60	3-4	1.95	3-4	2.71	3-3	3.44		
MAXIMUMS FOR PERIOD OF RECORD																		
1939 to 1963	6-28 1957	.62	6-28 1957	.52	6-28 1957	.82	6-28 1957	1.24	1-21 1959	1.60	1-21 1959	2.41	3-4 1963	2.71	3-3 1963	3.44		
NOTES: Watershed conditions: Cover of 16% cropland, 59% grassland, 21% woodland, 4% miscellaneous, improved practice. 1/ Rain gage 91. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																		
1940 SELECTED RUNOFF EVENT							COSHOCOTON, OHIO WATERSHED 92										26.33	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF											
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)								
Event of June 18, 1940																		
5-19	RG 91 .18	.0092	6-18	RG 1523	.91 .00	.00	6-18	1530	.0018	.0000								
5-20	.00	.0092		1526	1.60	.08		1550	.0028	.0007								
5-21	T .00	.0030		1530	.60	.12		1554	.0060	.0010								
5-22	.00	.0053		1532	.30	.13		1558	.0134	.0017								
5-23	.15	.0056		1537	.00	.13		1601	.0247	.0026								
5-24	1.61	.0773		1542	4.32	.49		1603	.0383	.0037								
5-25	.00	.0779		1546	3.30	.71		1608	.0633	.0080								
5-26	.00	.0458		1550	1.20	.79		1615	.0843	.0167								
5-27	.00	.0330		1557	.51	.85		1630	.0716	.0361								
5-28	.00	.0233		1600	.40	.87		1635	.0716	.0420								
5-29	.42	.0187		1610	.12	.89		1644	.0692	.0526								
5-30	1.00	.0490		1630	.06	.91		1650	.0704	.0596								
5-31	.02	.1062						1700	.0645	.0708								
6-1	.00	.0682						1720	.0415	.0886								
6-2	.00	.0482						1740	.0291	.0994								
6-3	.00	.0384						1800	.0225	.1079								
6-4	.00	.0272						1840	.0158	.1204								
6-5	.00	.0231						1920	.0126	.1297								
6-6	.00	.0176						1950	.0113	.1356								
6-7	.09	.0194						2130	.0110	.1543								
6-8	.82	.0289						2400	.0101	.1809								
6-9	.70	.0683						0130	.0095	.1955								
6-10	.80	.1388						0400	.0084	.2178								
6-11	.60	.2230						0640	.0077	.2393								
6-12	.34	.1577						0900	.0069	.2563								
6-13	.00	.1348						1230	.0060	.2728								
6-14	.06	.0755						1730	.0048	.2997								
6-15	.07	.0602						2400	7/.0037	.3271								
6-16	.00	.0480																
6-17	.00	.0363																
6-18	2/.38	6/.0223																
Watershed conditions: Mixed cover under prevailing practice. 6% of area in corn 30 in. high, 0.1% in potatoes, 6% in wheat 36 in. high, 3.4% in oats 16 in. high, 1% in soybeans, 26% in meadow 13 in. high, 27% in pasture 10 in. high, 8% in pastured woodland, 12% in protected woodland, 0.5% reforested, 5% idle, 3% farmstead, 2% roads.																		
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 927.64. FOR REVISED MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, P. 26.32-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.33-1 AND 26.37-2. 5/ RAINFALL PRIOR TO 1300. 6/ RUNOFF PRIOR TO 1530. 7/ NORMAL BASE FLOW.																		



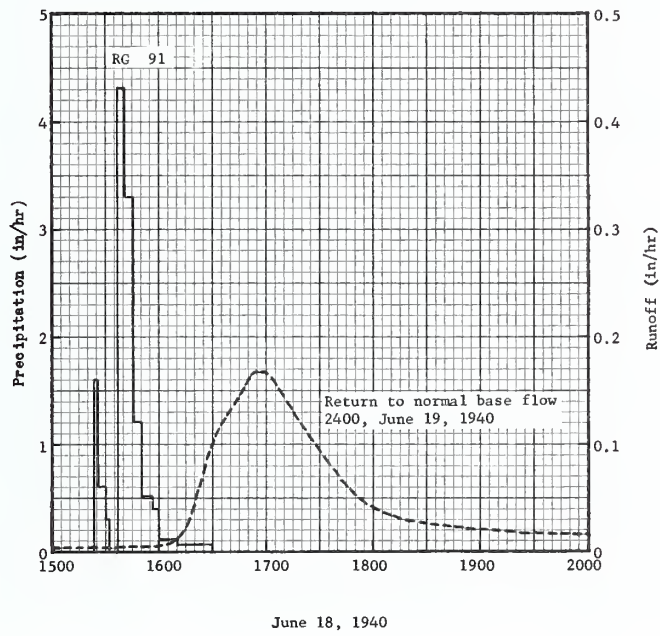
COSHOCOTON, OHIO WATERSHED 92

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO LITTLE MILL CREEK WATERSHED 94 26.34 AREA—1,520 ACRES (2.37 SQ. MILES)										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.06 .48	1.15 .31	6.19 6.76	3.20 1.63	2.16 .42	3.26 .79	3.12 .10	2.80 .08	.36 .01	.26 T	1.54 .02	1.51 .02	27.61 10.62		
STA AV 2/P (39-63) Q		2.81 1.63	2.56 1.75	3.39 2.41	3.40 1.96	3.68 1.16	4.40 1.00	4.30 .51	2.86 .23	2.50 .15	2.28 .19	2.46 .36	2.29 .80	36.93 12.15		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.32	3-4	.30	3-4	.59	3-4	1.46	3-4	2.14	3-4	2.47	3-4	3.22	3-4	3.95
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1963	6-28 1957	.92	6-28 1957	.77	6-28 1957	1.22	6-28 1957	1.79	3-4 1963	2.14	1-21 1959	2.95	1-20 1959	3.27	3-4 1963	3.95
NOTES: Watershed conditions: Cover of 15% cropland, 57% grassland, 24% woodland, 4% miscellaneous, improved practice. 1/ Arithmetic average rain gages 27 and 91. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO WATERSHED 94 26.34										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
5-19	2 RG 4/ .17	.0100	6-18	RG 1523	.91 .00	.00	6-18	1536	.0020	.0000						
5-20	.00	.0090		1526	1.60	.08		1548	.0040	.0005						
5-21	T .00	.0070		1530	.60	.12		1552	.0060	.0008						
5-22	.00	.0060		1532	.30	.13		1554	.0100	.0011						
5-23	.16	.0070		1537	.00	.13		1556	.0184	.0015						
5-24	1.61	.1224		1542	4.32	.49		1558	.0261	.0023						
5-25	.00	.0493		1546	3.30	.71		1600	.0420	.0034						
5-26	.00	.0288		1550	1.20	.79		1604	.0667	.0071						
5-27	.00	.0219		1557	.51	.85		1606	.0909	.0097						
5-28	.00	.0180		1600	.40	.87		1610	.135	.0169						
5-29	.43	.0181		1610	.12	.89		1612	.146	.0216						
5-30	.98	.0976		1630	.06	.91		1620	.152	.0414						
5-31	.02	.0996						1628	.162	.0624						
6-1	.00	.0530						1636	.143	.0827						
6-2	.00	.0416						1640	.132	.0919						
6-3	.00	.0310						1648	.106	.1078						
6-4	.00	.0248						1652	.101	.1147						
6-5	.00	.0201						1656	.0889	.1210						
6-6	.00	.0174						1716	.0667	.1468						
6-7	.07	.0174						1732	.0486	.1619						
6-8	.68	.0327						1752	.0318	.1749						
6-9	.68	.0709						1820	.0220	.1874						
6-10	.78	.1547						1900	.0167	.2001						
6-11	.58	.2428						2020	.0119	.2187						
6-12	.30	.1449						2400	.0078	.2532						
6-13	.00	.1057						1200	.0042	.3219						
6-14	.06	.0664						2400	7/.0028	.3615						
6-15	.05	.0511														
6-16	.00	.0390														
6-17	.00	.0329														
6-18	5/.39	6/.0271														
Watershed conditions: Mixed cover under prevailing practice. 5.9% of area in corn 30 in. high, 0.2% in potatoes, 5.5% in wheat 36 in. high, 2% in oats 16 in. high, 1% in soybeans, 25% in meadow 13 in. high, 27% in pasture 10 in. high, 9.8% in pastured woodland, 14% in protected woodland, 0.6% reforested, 5% idle, 2.5% farmstead, 1.5% roads.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1532.7. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.34-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.34-1 AND 26.37-2. 4/ ARITHMETIC AVERAGE RAIN GAGES 91 AND 27. 5/ RAINFALL PRIOR TO 1330. 6/ RUNOFF PRIOR TO 1536. 7/ NORMAL BASE FLOW.																



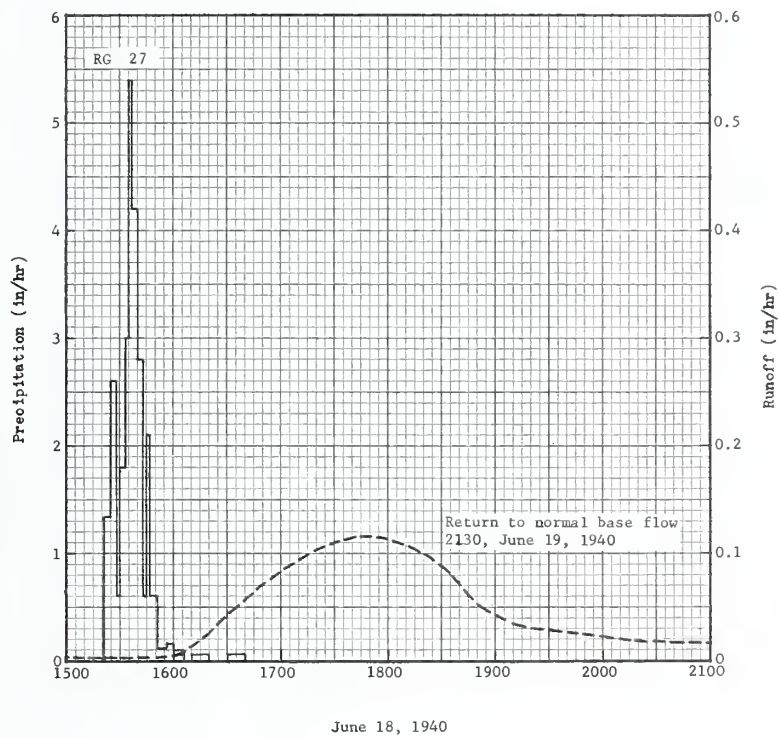
COSHOCOTON, OHIO WATERSHED 94

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO LITTLE MILL CREEK WATERSHED 95 AREA—2,570 ACRES (4.02 SQ. MILES)							26.35		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/	2.06	1.15	6.19	3.20	2.16	3.26	3.12	2.80	.36	.26	1.54	1.51	27.61		
	Q	.54	.46	6.87	1.41	.36	.65	.06	.06	T	.00	.01	.02	10.44		
	STA AV 2/P	2.83	2.56	3.40	3.42	3.68	4.45	4.25	2.84	2.48	2.27	2.47	2.29	36.94		
(39-63)	Q	1.59	1.74	2.43	2.00	1.15	.94	.47	.21	.14	.18	.36	.80	12.01		
	MEAN P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.31	3-4	.31	3-4	.61	3-4	1.58	3-4	2.32	3-4	2.78	3-4	3.49	3-2	4.24
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO	6-28	.61	6-28	.56	6-28	.95	3-4	1.58	3-4	2.32	3-4	2.78	3-4	3.49	3-2	4.24
1963	1957		1957		1957		1963		1963		1963		1963		1963	
NOTES: Watershed conditions: Cover of 15% cropland, 55% grassland, 26% woodland, 4% miscellaneous, improved practice. 1/ Arithmetic average rain gages 27, and 91. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT							COSHOCTON, OHIO WATERSHED 95							26.35		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
5-19	2 RG 4/ .17	.0105	6-18	RG 91 1523	.00	.00	6-18	1536	.0021	.0000						
5-20	.00	.0090		1526	1.60	.08		1552	.0028	.0006						
5-21	T .00	.0071		1530	.60	.12		1600	.0042	.0010						
5-22	.00	.0063		1532	.30	.13		1606	.0066	.0015						
5-23	.16	.0077		1537	.00	.13		1610	.0115	.0021						
5-24	1.61	.1131		1542	4.32	.49		1614	.0205	.0031						
5-25	.00	.0515		1546	3.30	.71		1618	.0365	.0051						
5-26	.00	.0276		1550	1.20	.79		1622	.0579	.0083						
5-27	.00	.0213		1557	.51	.85		1626	.0814	.0144						
5-28	.00	.0179		1600	.40	.87		1632	.1085	.0235						
5-29	.43	.0193		1610	.12	.89		1638	.1282	.0352						
5-30	.98	.1134		1630	.06	.91		1650	.1606	.0639						
5-31	.02	.1144						1653	.1675	.0721						
6-1	.00	.0595						1700	.1675	.0913						
6-2	.00	.0438						1715	.1297	.1294						
6-3	.00	.0325						1724	.1058	.1519						
6-4	.00	.0238						1734	.0822	.1640						
6-5	.00	.0116						1742	.0656	.1736						
6-6	.00	.0147						1750	.0521	.1815						
6-7	.07	.0167						1800	.0405	.1891						
6-8	.68	.0317						1820	.0293	.2005						
6-9	.68	.0659						1850	.0217	.2131						
6-10	.78	.1937						1930	.0169	.2258						
6-11	.58	.2869						2100	.0119	.2538						
6-12	.30	.1429						2400	.0084	.2767						
6-13	.00	.1036						0400	.0065	.3100						
6-14	.06	.0656						1010	.0052	.3406						
6-15	.05	.0498						2400	7/.0031	.3936						
6-16	.00	.0386														
6-17	.00	.0298														
6-18	2/.39	6/.0247														
Watershed conditions: Mixed cover under prevailing practice. 6% in corn 30 in. high, 0.2% in potatoes, 6% in wheat 36 in. high, 1.8% in oats 16 in. high, 0.6% in soybeans, 24% in meadow 13 in. high, 23% in pasture 10 in. high, 9% in pastured woodland, 17% in protected woodland, 0.4% reforested, 8% idle, 2% farmstead, 2% roads.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2591.4. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.34-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.35-1 AND 26.37-2. 4/ ARITHMETIC AVERAGE RAIN GAGES 91 AND 27. 5/ RAINFALL PRIOR TO 1330. 6/ RUNOFF PRIOR TO 1536. 7/ NORMAL BASE FLOW.																



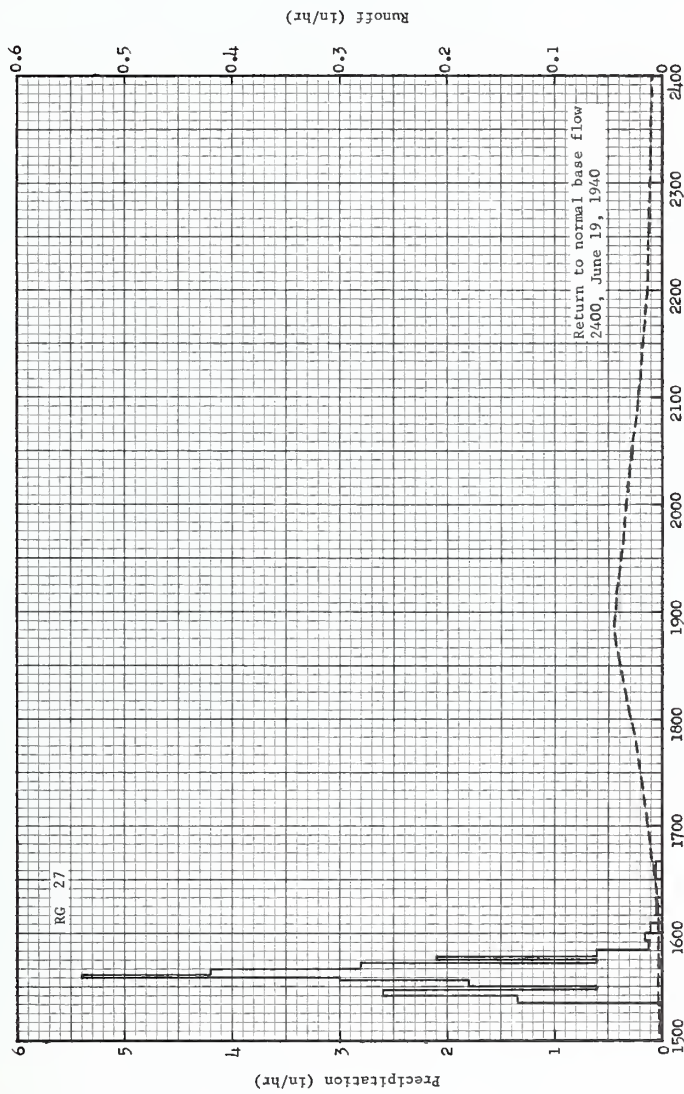
COSHOCTON, OHIO WATERSHED 95

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO LITTLE MILL CREEK WATERSHED 97 AREA - 4,580 ACRES (7.16 Sq. MILES)							26.36		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1 Q	2.06 .48	1.14 .34	6.04 6.30	3.01 1.24	1.97 .32	3.24 .59	2.69 .04	2.84 .05	.25 T	.25 T	1.58 .01	1.48 .01	26.55 9.38		
STA AV (37-63)	2/P Q	3.05 1.88	2.49 1.71	3.41 2.42	3.45 2.06	3.75 1.19	4.55 1.04	4.25 .53	2.82 .23	2.45 .14	2.27 .16	2.43 .35	2.30 .84	37.22 12.55		
MEAN P 54 YR	3/ Q	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.34	3-4	.33	3-4	.65	3-4	1.53	3-4	2.09	3-4	2.41	3-4	3.16	3-2	3.83
MAXIMUMS FOR PERIOD OF RECORD																
1937 TO 1963	6-28 1957	.72	6-28 1957	.66	6-28 1957	1.15	1-24 1937	1.89	1-21 1959	4/2.32	1-21 1959	3.24	1-20 1959	3.54	1-18 1937	6.77
NOTES: Watershed conditions: Cover of 18% cropland, 50% grassland, 28% woodland, 4% miscellaneous, improved practice. 1/ Arithmetic average rain gages 27, 54, 56, and 91. 2/ Precipitation and runoff records began Jan. 1937. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio. 4/ Erroneously shown as 3.24 inches in 1962 volume.																
1940 SELECTED RUNOFF EVENT							COSHOCKTON, OHIO WATERSHED 97							26.36		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18, 1940																
5-19	4 RG 4/ .16	.0109	6-18	RG	27		6-18	1545	.0024	.0000						
5-20	.00	.0105		1521	.00	.00		1604	.0048	.0009						
5-21	T .00	.0083		1525	1.35	.09		1610	.0124	.0018						
5-22		.0071		1528	2.60	.22		1620	.0253	.0049						
				1530	.60	.24										
5-23	.17	.0065		1533	1.80	.33		1632	.0446	.0119						
5-24	1.59	.1639		1535	3.00	.43		1640	.0563	.0186						
5-25	.00	.0572		1537	5.40	.61		1700	.0823	.0419						
5-26	.00	.0307		1540	4.20	.82		1712	.0937	.0596						
5-27	.00	.0234		1543	2.80	.96		1724	.1061	.0797						
5-28	.00	.0194		1545	.60	.98		1740	.1152	.1093						
5-29	.45	.0197		1547	2.10	1.05		1747	.1160	.1228						
5-30	.88	.1165		1551	.60	1.09		1750	.1156	.1286						
5-31	.02	.1265		1556	.12	1.10		1810	.1076	.1660						
6-1	.00	.0575		1600	.15	1.11		1830	.0892	.1998						
6-2	.00	.0418		1606	.10	1.12		1840	.0727	.2135						
6-3	.00	.0317		1610	.00	1.12		1850	.0520	.2239						
6-4	.00	.0264		1620	.06	1.13		1910	.0348	.2459						
6-5	.00	.0214		1630	.00	1.13		1940	.0253	.2608						
6-6	.00	.0180		1640	.06	1.14		2020	.0194	.2756						
6-7	.07	.0169						2130	.0148	.2953						
6-8	.48	.0289						2230	.0124	.3087						
6-9	.50	.0489						2400	.0105	.3258						
6-10	1.03	.2546						0300	.0084	.3540						
6-11	.62	.3927						0730	.0066	.3873						
6-12	.22	.1634						1330	.0048	.4214						
6-13	.00	.1038						2130	7/.0030	.4508						
6-14	.06	.0568														
6-15	.04	.0434														
6-16	.00	.0336														
6-17	.00	.0281														
6-18	5/.45	6/.0249														
Watershed conditions: Mixed cover under prevailing practice, 6% of area in corn 30 in. high, 0.2% in potatoes, 6% in wheat 36 in. high, 2% in oats 16 in. high, 0.7% in soybeans, 24% in meadow 13 in. high, 25% in pasture 10 in. high, 7% in pastured woodland, 17% in protected woodland, 1.6% reforested, 8% idle, 2% farmstead, 1.5% roads.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4618.1. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.34-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.36-1 AND 26.37-2. 4/ ARITHMETIC AVERAGE RAIN GAGES 27, 54, 56 AND 91. 5/ RAINFALL PRIOR TO 1330. 6/ RUNOFF PRIOR TO 1545. 7/ NORMAL BASE FLOW.																



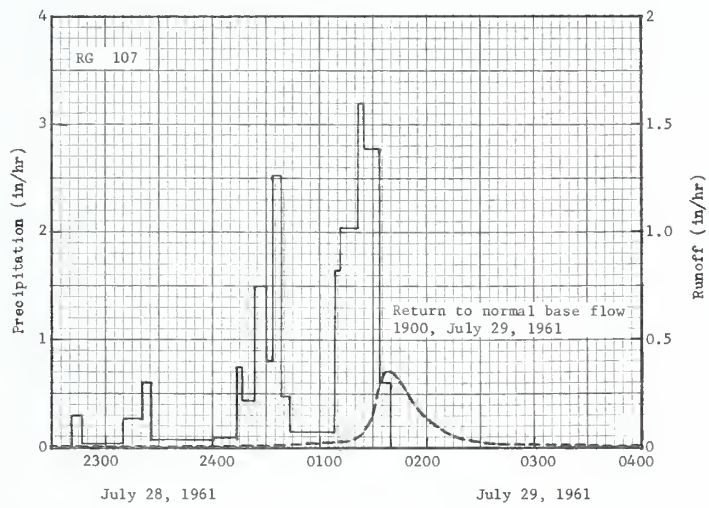
COSHOCOTON, OHIO WATERSHED 97

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO MILL CREEK WATERSHED 994 AREA—17,400 ACRES (27.2 SQ. MILES) 1/							26.37		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 2/	2.07	1.13	6.08	3.16	1.93	3.19	2.93	2.65	.28	.23	1.53	1.44	26.62		
	Q 3/	.82	.61	7.38	1.54	.42	.60	.09	.07	.01	T	.02	.03	11.59		
STA AV 4/P (36-63)3/Q		3.05	2.49	3.41	3.45	3.75	4.55	4.26	2.82	2.45	2.32	2.45	2.32	37.32		
		2.04	1.93	2.49	2.13	1.30	1.09	.61	.26	.16	.22	.43	.90	13.56		
MEAN P 5/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.27	3-4	.26	3-4	.51	3-4	1.31	3-4	2.08	3-4	2.83	3-4	3.30	3-4	4.70
MAXIMUMS FOR PERIOD OF RECORD																
1936 TO 1963	6-28 1957	.44	6-28 1957	.43	6-28 1957	.81	6-28 1957	1.71	6-28 1957	2.16	1-21 1959	3.06	1-21 1959	3.45	1-18 1937	4.76
NOTES: Watershed conditions: Cover of 15% cropland, 55% grassland, 26% woodland, 4% miscellaneous, generally under improved practice. 1/ Drainage area revised from 27.5 to 27.2 sq. miles by U.S. Geological Survey 10-1-62. 2/ Arithmetic average rain gages 27, 54, 56, 91, Mc4, and Mc6. 3/ Runoff data furnished by U.S. Geological Survey, New Philadelphia, Ohio. 4/ Precipitation and runoff records began Oct., 1936. All monthly amounts included in averages. 5/ Mean P based on 54 yr (1909-62) U.S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT							COSHOCKTON, OHIO WATERSHED 994							26.37		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 18 and 19, 1940																
	4 RG 6/		6-18	RG	27		6-18									
5-19	.16	.0097		1521	.00	.00		1545	.0018	.0000						
5-20	.00	.0111		1525	1.35	.09		1615	.0029	.0012						
5-21	T	.0092		1528	2.60	.22		1630	.0070	.0024						
5-22	.00	.0073		1530	.60	.24		1645	.0100	.0045						
5-23	.17	.0070		1533	1.80	.33		1700	.0131	.0074						
5-24	1.59	.0892		1535	3.00	.43		1715	.0164	.0111						
5-25	.00	.0648		1537	5.40	.61		1730	.0201	.0157						
5-26	.00	.0338		1540	4.20	.82		1745	.0240	.0212						
5-27	.00	.0243		1543	2.80	.96		1800	.0296	.0279						
5-28	.00	.0189		1545	.60	.98		1815	.0348	.0359						
5-29	.45	.0176		1547	2.10	1.05		1830	.0394	.0452						
5-30	.88	.0676		1551	.60	1.09		1845	.0442	.0557						
5-31	.02	.1283		1556	.12	1.10		1855	.0448	.0631						
6-1	.00	.0648		1600	.15	1.11		1915	.0419	.0775						
6-2	.00	.0473		1606	.10	1.12		1930	.0394	.0877						
6-3	.00	.0365		1610	.00	1.12		2000	.0340	.1060						
6-4	.00	.0311		1620	.06	1.13		2030	.0277	.1215						
6-5	.00	.0243		1630	.00	1.13		2100	.0219	.1339						
6-6	.00	.0189		1640	.06	1.14		2130	.0179	.1438						
6-7	.07	.0189						2200	.0143	.1519						
6-8	.48	.0257						2230	.0124	.1585						
6-9	.50	.0338						2315	.0106	.1672						
6-10	1.03	.1351						2400	.0091	.1746						
6-11	.62	.2729						0045	.0082	.1811						
6-12	.22	.1337						0215	.0070	.1925						
6-13	.00	.1081						0400	.0061	.2040						
6-14	.06	.0621						0700	.0052	.2209						
6-15	.04	.0486						1200	.0042	.2444						
6-16	.00	.0365						2400	9/.0025	.2846						
6-17	.00	.0297														
6-18	7/.45	8/.0180														
Watershed conditions: Mixed cover under prevailing practice. 6% of area in corn 30 in. high, 0.2% in potatoes, 6% in wheat 36 in. high, 2% in oats 16 in. high, 0.7% in soybeans, 24% in meadow 13 in. high, 24% in pasture 10 in. high, 7% in pastured woodland, 17% in protected woodland. 1.6% reforested, 8% idle, 2% farmstead, 1.5% roads.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 17545. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.37-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.37-1 AND 26.37-2. 6/ ARITHMETIC AVERAGE RAIN GAGES 27,54, 56 AND 91. 7/ RAINFALL PRIOR TO 1330. 8/ RUNOFF PRIOR TO 1545. 9/ NORMAL BASE FLOW.																



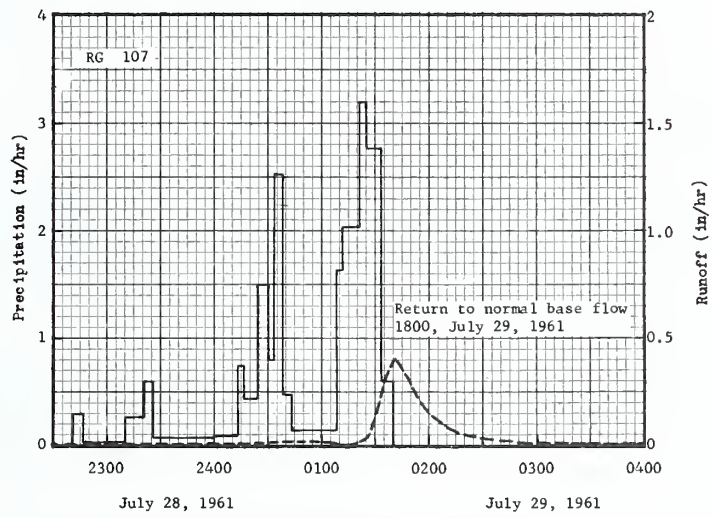
COSHOCKTON, OHIO WATERSHED 994

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO				WATERSHED 174				26.38	
							AREA—52.8 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	2.07 .32	1.13 .23	5.95 4.59	2.75 .49	1.96 .07	3.19 .43	2.39 .01	2.87 .06	.22 .00	.27 .00	1.63 .00	1.44 .00	25.87 6.20		
STA AV (60-63)	2/P Q	1.84 .55	2.78 1.29	4.15 2.92	3.41 1.84	2.17 .14	3.68 .58	3.22 .10	2.94 .12	1.85 .02	1.61 .01	2.36 .16	1.89 .10	31.90 7.83		
MEAN P 54 YR	3/ Q	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.24	3-4	.23	3-4	.43	3-4	1.08	3-4	1.61	3-4	1.94	3-4	2.42	3-1	2.99
MAXIMUMS FOR PERIOD OF RECORD																
1961 TO 1963	4-25 1961	1.03	4-25 1961	.82	4-25 1961	1.11	4-25 1961	1.33	3-4 1963	1.61	3-4 1963	1.94	3-4 1963	2.42	3-1 1963	2.99
NOTES: Watershed conditions: Cover of 15% hardwoods, 2% reforested, 67% grassland, 16% miscellaneous, prevailing practice on 86% of area. 1/ Rain gage 107. 2/ Precipitation and runoff records began June 1960. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1961 SELECTED RUNOFF EVENT							COSHOCKTON, OHIO				WATERSHED 174				26.38	
ANTECEDENT CONDITIONS			RAINFALL						RUNOFF							
DATE MO-OAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-OAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-OAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 28 and 29, 1961 4/																
6-29	RG 107 .00	T	7-28	RG 107 2241	.00	.00	7-28	2230	T	.000						
6-30	.00	T		2247	.30	.03		2400	.0027	.006 T						
7-1	.00	T		2310	.03	.04	7-29	0045	.0127	.006						
7-2	.11	T		2321	.27	.09		0114	.0288	.015						
7-3	.00	T		2326	.60	.14		0120	.0398	.018						
7-4	.00	T		2400	.07	.18		0124	.0671	.022						
7-5	.25	T	7-29	0013	.09	.20		0126	.0800	.024						
7-6	.00	T		0017	.75	.25		0129	.140	.029						
7-7	.00	T		0024	.43	.30		0132	.238	.039						
7-8	.00	T		0030	1.50	.45		0133	.286	.044						
7-9	.00	T		0033	.80	.49		0134	.317	.049						
7-10	.00	T		0038	2.52	.70		0136	.337	.060						
7-11	.00	T		0043	.48	.74		0139	.359	.077						
7-12	.07	T		0108	.14	.80		0142	.337	.094						
7-13	.25	T		0112	1.65	.91		0144	.306	.105						
7-14	.00	T		0122	2.04	1.25		0148	.267	.124						
7-15	.07	T		0125	3.20	1.41		0150	.238	.133						
7-16	.00	T		0133	2.77	1.78		0152	.212	.140						
7-17	.33	.001		0140	.60	1.85		0158	.159	.159						
7-18	.03	T						0202	.115	.168						
7-19	.68	.012						0210	.0756	.180						
7-20	.00	.002						0220	.0442	.189						
7-21	.00	T						0240	.0203	.200						
7-22	.00	T						0400	.0030	.209						
7-23	.00	T						0830	.0007	.215						
7-24	1.29	.031						1900	6/.0001	.219						
7-25	.00	.004														
7-26	.00	T														
7-27	.00	T														
7-28	.00	5/ T														
Watershed conditions: Mixed cover under prevailing practice. 15% hardwoods. 2% reforested. 67% grassland. 16% miscellaneous.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 53.240. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 26.30-4, FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 107Q, PP. 26.38-1 AND 26.30-3. 4/ SUBSTITUTED FOR JUNE 18, 1940, STATION NOT IN OPERATION. 5/ RUNOFF PRIOR TO 2230. 6/ NORMAL BASE FLOW.																



COSHOCOTON, OHIO WATERSHED 174

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO				AREA—187. ACRES				WATERSHED 194		26.39	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963	P1/	2.07	1.13	5.95	2.75	1.96	3.19	2.39	2.87	.22	.27	1.63	1.44	25.87				
	Q	.66	.65	6.32	1.32	.67	.92	.10	.10	.02	.02	.03	.04	10.85				
STA AV	2/P	2.10	2.88	3.36	2.94	2.38	3.68	3.22	2.94	1.85	1.61	2.36	1.89	31.21				
	(60-63) Q	1.26	1.73	3.64	2.35	.71	.86	.22	.15	.09	.08	.26	.29	11.64				
MEAN P	3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80				
54 YR																		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																		
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL															
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS			
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1963	3-19	.21	3-4	.16	3-4	.30	3-4	.71	3-4	1.01	3-4	1.30	3-4	2.00	3-1	3.65		
MAXIMUMS FOR PERIOD OF RECORD																		
1960 TO	4/4-25	.87	4-25	.68	4-25	.93	4-25	1.12	4-25	1.29	4-25	1.49	3-4	2.00	3-1	3.65		
1963	1961		1961		1961		1961		1961		1961		1963		1963			
Notes: Watershed conditions: Cover of 21% hardwoods, 2% reforested, 58% grassland, 11% cultivated, 8% miscellaneous, prevailing practice. 1/ Rain gage 107. 2/ Precipitation and runoff records began Jan. 1960. 3/ Mean P based on 54 yr (1909-62) U.S. Weather Bureau record period at Coshocton, Ohio. 4/ Date erroneously shown as 4-24-61 in 1962 volume.																		
1961 SELECTED RUNOFF EVENT							COSHOCTON, OHIO				WATERSHED 194				26.39			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF											
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)								
Event of July 28 and 29, 1961 5/																		
6-29	RG 107	.0048	7-28	RG 107	.00	.00	7-28	2200	.0001	.0000								
6-30	.00	.0048		2241	.30	.03		2400	.0003	.0005								
7-1	.00	.0048		2310	.03	.04	7-29	0015	.0031	.0009								
7-2	.11	.0051		2321	.27	.09		0050	.0167	.0056								
7-3	.00	.0051		2326	.60	.14		0100	.0167	.0084								
7-4	.00	.0048		2400	.07	.18		0104	.0131	.0094								
7-5	.25	.0066	7-29	0013	.09	.20		0110	.0093	.0105								
7-6	.00	.0048		0017	.75	.25		0120	.0191	.0128								
7-7	.00	.0036		0024	.43	.30		0126	.0396	.0155								
7-8	.00	.0031		0030	1.50	.45		0129	.111	.0189								
7-9	.00	.0026		0033	.80	.49		0132	.176	.0260								
7-10	.00	.0026		0038	2.52	.70		0134	.261	.0333								
7-11	.00	.0026		0043	.48	.74		0136	.326	.0431								
7-12	.07	.0037		0108	.14	.80		0138	.366	.0547								
7-13	.25	.0050		0112	1.65	.91		0141	.402	.0739								
7-14	.00	.0046		0122	2.04	1.25		0142	.386	.0804								
7-15	.07	.0036		0125	3.20	1.41		0143	.357	.0866								
7-16	.00	.0031		0133	2.77	1.78		0150	.278	.1246								
7-17	.33	.0041		0140	.60	1.85		0156	.195	.1479								
7-18	.03	.0047						0202	.138	.1639								
7-19	.68	.0215						0208	.0970	.1756								
7-20	.00	.0053						0217	.0546	.1866								
7-21	.00	.0034						0230	.0298	.1955								
7-22	.00	.0026						0250	.0167	.2030								
7-23	.00	.0026						0330	.0047	.2103								
7-24	1.29	.0417						0600	.0016	.2170								
7-25	.00	.0070						1800	7/.0003	.2260								
7-26	.00	.0036																
7-27	.00	.0032																
7-28	.00	6/.0024																
Watershed conditions: Mixed cover under prevailing practice. 21% of area in hardwoods. 2% reforested. 58% in grassland. 11% in cultivation. 8% miscellaneous.																		
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 188.56. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 26.30-4. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.39-1 AND 26.30-3. 5/ SUBSTITUTED FOR JUNE 18, 1940, STATION NOT IN OPERATION. 6/ RUNOFF PRIOR TO 2200.																		
7/ NORMAL BASE FLOW.																		



COSHOCTON, OHIO WATERSHED 194

COLBY, WISCONSIN WATERSHED W-1

LOCATION: Clark County, Wis.; 2 miles south of Colby; Big Eau Pleine River, Wisconsin River Basin.

AREA: 345 acres

SLOPES:	Slope—Percent	0-1.5	1.5-4	4-7
	Percent of area	18	79	3

SOILS: (Revision) Thin loess mantle overlying a firm plastic loamy acid till.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Withee silt loam	61	8	Moderate medium granular	Moderately slow	Moderate, medium subangular blocky	Moderately slow	36	Slow	Slow
Marshfield silt loam	33	10	Moderate medium granular	Moderately slow	Moderate, medium subangular blocky	Slow	36	Slow	Slow
Cable silt loam	4	10	Moderate medium granular	Moderately slow	Weak to moderate subangular blocky	Slow	36	Slow	Slow
Loyal silt loam	2	8	Moderate medium granular	Moderate	Moderate medium subangular blocky	Moderately slow	36	Slow	Moderately slow

EROSION:	Erosion class	1	2
	Percent of area	67	33

LAND CAPABILITY:	Class	II	III	IV	V
	Percent of area	2	61	33	4

GEOLOGY: (Revision) No detailed geological information is available at the site of the Colby Station. The area was glaciated during the early Wisconsin Stage of the Pleistocene glaciation, and the glacial drift is underlain by crystalline rocks of Precambrian age. The thickness of drift is probably on the order of 20-80 feet. A few miles to the west sandstones of Cambrian age overlie the crystallines, and it is possible that thin erosional remnants of sandstone may occur in depressions on the surface of the crystalline rocks. Source of data: George F. Hanson, State Geologist.

SURFACE DRAINAGE: (Revision) Fair; length of principal waterway approximately 6000 ft., a natural watershed with surface flow to one main waterway.

CHARACTER OF FLOW: Ephemeral, continuous

INSTRUMENTATION: (Revision) Runoff: 16 inch broad-crested V-notch concrete weir with 5 to 1 side slopes equipped with FW-1 recorder, with 12-hr. time scale. Precipitation: Three recording rain gages, two with 12-hr and one with 192-hr. time scale.

WATERSHED CONDITIONS: (Revision) 11 percent in ungrazed woodlot; 31 percent in permanent pasture; 76 percent generally farmed in 3 yr. rotation of corn, oats, clover. No special soil conservation measures being applied.

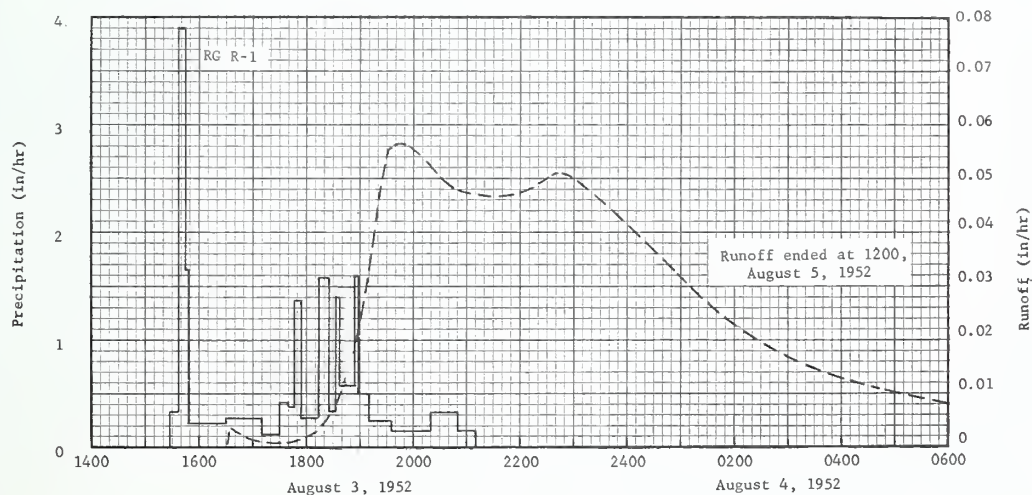
GENERALLY REPRESENTS: (Revision) Cultivated section of central Wisconsin silty soil area having slow surface and internal drainage and moderate erosion. Applicable to similar lands in the former Central Wisconsin Silty Area problem area C12, but now designated as the Central Wisconsin and Minnesota Thin Loess and Till land resource area (K-90).

MONTHLY PRECIPITATION AND RUNOFF (inches)										COLBY, WISCONSIN WATERSHED W-1				29.01
										AREA — 345 ACRES				
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	P ^{1/} Q ^{2/}	.33 nr	.48 nr	1.68 nr	1.99 nr	3.97 1.47	2.41 .00	2.14 .00	1.72 .00	4.94 T	1.15 T	1.28 nr	.42 nr	22.51 1.47
STA AV P (49-63) Q		.87 nr	.87 nr	1.51 nr	2.22 nr	3.27 .42	3.95 .26	3.99 .23	3.80 .11	2.66 .18	1.83 .15	1.42 .00	.76 .01	27.15 1.36
MEAN P ^{3/} 74 YR		1.05	1.12	1.75	2.58	3.98	4.91	3.42	3.72	3.82	2.53	1.73	1.21	31.82
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS														
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL											
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1962	9-13	<u>4/ .32</u>	9-13	.29	9-13	.48	9-13	.82	9-13	.94	9-13	.99	9-13	1.01
1963	5-13	.17	5-13	.16	5-13	.30	5-12	.57	5-12	.69	5-12	.74	5-12	.77
MAXIMUMS FOR PERIOD OF RECORD														
19 49 TO 6- 4	1958	.57	6- 4	.45	6- 4	.59	6- 4	1.10	6- 4	1.21	6- 4	1.25	5- 9	1.51
19 63	1958		1958		1958		1958		1958		1958		1960	1960
Notes: Quality of records: Monthly P and Q, excellent. Watershed conditions: 13% permanent pasture, 11% ungrazed woods, 3% roads and building sites, 73% - 3-yr. rotation of corn, small grain, hay. 1/ Precipitation data is arithmetic average of three recording rain gages. Precipitation and runoff records began May 1949. 2/ Runoff station not in operation during months shown as nr. 3/ Mean P based on 74-yr (1890-1963) U.S. Weather Bureau record period at Neillsville, Wis. 4/ Maximum Discharge rate for 9-13-62 published in Ref. 6 revised and correct value underlined.														

1963 SELECTED RUNOFF EVENT			COLBY, WISCONSIN				WATERSHED W-1			29.01
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
			<u>Event of August 3, 1952</u>							
3 RG 1/			RG	R-1						
7- 7	.46	.0000	8-3	1528	.00	.00	8-3	1535	.0000	.0000
7- 9	.40	.0005		1537	.33	.05		1632	.0001	.0001
7-13	.22	.0000		1545	3.90	.57		1640	.0027	.0005
7-14	.49	.0000		1549	1.65	.68		1735	.0010	.0019
7-19	.59	.0001		1630	.22	.83		1805	.0024	.0026
7-20	1.52	.1770		1710	.27	1.01		1825	.0060	.0038
7-21	.00	.1428		1730	.12	1.05		1845	.0126	.0067
7-22	.00	.0025		1740	.42	1.12		1900	.0238	.0113
7-23	.04	.0000		1748	.38	1.17		1920	.0448	.0236
8- 1	.37	.0000		1755	1.37	1.33		1930	.0551	.0319
				1813	.27	1.41		1942	.0564	.0430
				1824	1.58	1.70		1950	.0562	.0505
				1833	.33	1.75		2015	.0529	.0732
				1836	1.40	1.82		2045	.0483	.0984
				1855	.57	2.00		2150	.0468	.1497
				1858	1.60	2.08		2215	.0484	.1695
				1910	.50	2.18		2235	.0507	.1860
				1935	.24	2.28		2250	.0513	.1987
				2020	.15	2.39		2330	.0459	.2312
				2050	.32	2.55		2400	.0415	.2530
				2110	.15	2.60	8-4	0102	.0317	.2908
								0205	.0224	.3189
								0242	.0184	.3315
								0325	.0151	.3442
								0505	.0102	.3652
<u>Watershed conditions:</u> 21.7% in permanent pasture, 11% in un-grazed woods, 2.8% in roads and farmsteads, 64.5% in 4 yr. rotation of corn, small grain, hay, hay.			RG	R-2	2.40			0700	.0064	.3807
			RG	R-3	2.32			0900	.0038	.3908
								1200	.0020	.3995
			3 RG	AVG 1/	2.44			1500	.0011	.4043
								1800	.0007	.4069
								2400	.0003	.4098
							8-5	0950	2/.0001	.4121

Watershed conditions: 21.7% in permanent pasture, 11% in ungrazed woods, 2.8% in roads and farmsteads, 64.5% in 4 yr. rotation of corn, small grain, hay, hay.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 347.864. FOR MAP OF WATERSHED, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 29.1-5. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 1, 2, AND 3. 2/ RUNOFF ENDED AT 1200, AUGUST 5, 1952.



COLBY, WISCONSIN WATERSHED W-1

FENNIMORE, WISCONSIN WATERSHED W-1

LOCATION: Grant County, Wis.; 1 mile northeast of Fennimore; Blue River Branch, Wisconsin River Basin.

AREA: 330 acres

SLOPES:	Slope—Percent	0-2	2-6	6-10	10-15	15-20
	Percent of area	2	62	25	9	2

SOILS: (Revision) Thick to moderately thick silt mantle over bedrock or residual clays from limestone plus an accumulative silty material in natural drainageways.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Tama silt loam	50	10	Moderate medium granular	Moderate	Moderate, medium, sub-angular blocky	Moderate	48	Moderate	Medium
Dubuque silt loam	19	8	Moderate medium granular	Moderate	Moderate medium, sub-angular blocky	Moderate	30	Moderate	Medium
Dodgeville silt loam	23	10	Moderate medium granular	Moderate	Moderate medium, sub-angular blocky	Moderate	36	Moderate	Medium
Judson silt loam	8	24	Moderate medium granular	Moderate	-----	-----	24	Moderate	Medium

EROSION:	Erosion class	+	2	3
	Percent of area	8	50	42

LAND CAPABILITY:	Class	II	III	IV	VI
	Percent of area	45	32	17	6

GEOLOGY: The only rock exposed in the watershed is the Prosser member of the Galena formation of Middle Ordovician age. The Prosser is a compact well-bedded cherty calcitic dolomite or sandy calcitic dolomite. There is a sparse fauna of gastropods, crinoid stems, and Receptaculites species. Jointing is pronounced with two sets of joints at approximate right angles. The Prosser is overlain by clay-chert residuum, Pleistocene loess, and Recent soils which vary in thickness from several inches to over five feet. Below the Prosser is a gradational contact with the Ordovician Decorah formation. The watershed is on the southwest flank of the Wisconsin Arch, the strata dipping 7 to 10 feet per mile to the south southwest. Source of data: R. N. Cheetham, Geologist, SCS.

SURFACE DRAINAGE: (Revision) Good; length of principle waterway approximately 5800 ft., a natural watershed with surface flow to several tributary waterways with areas of 20 to 60 acres.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: (Revision) Runoff: 16-inch broad-crested V-notch concrete weir with 5 to 1 side slopes equipped with FW-1 recorder, with 12-hr. time scale. Precipitation: Nine recording rain gages, eight with 12-hr. and one with 192-hr. gears.

WATERSHED CONDITIONS: (Revision) Mixed cover area, over half in 3-yr. rotation of corn, small grain, hay. Vegetative cover for the period of record, in percent of area, was:

Year:	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
Crop													
Corn	24.7	31.1	18.9	23.0	19.9	28.5	31.9	32.6	23.4	11.1	29.2	19.9	14.6
Small Grain	21.1	17.8	24.0	17.7	15.7	11.6	18.1	21.9	25.8	20.6	10.3	27.8	19.8
Hay	30.3	28.4	30.5	34.3	32.1	31.4	24.6	21.7	24.1	30.0	35.2	16.4	31.2
Pasture	18.4	17.2	21.1	19.5	26.8	23.0	19.9	18.3	21.2	32.8	19.8	30.4	28.9
Roads & Bldgs.	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5

Year:	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Crop													
Corn	21.4	24.5	31.3	34.7	43.3	31.4	14.9	26.1	34.8	36.7	17.9	29.0	26.2
Small Grain	12.2	21.0	22.7	10.4	12.0	26.2	24.0	18.9	15.8	17.9	24.7	13.8	12.2
Hay	18.4	13.2	18.7	22.2	11.6	11.6	23.9	16.1	15.3	13.0	20.7	14.3	11.9
Pasture	42.5	35.8	21.8	27.2	27.6	25.3	19.5	23.4	28.3	26.6	30.5	28.0	34.5
Roads & Bldgs.	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.8	5.8	6.2	6.2	6.5
Idle							12.2	10.0				8.7	8.7

GENERALLY REPRESENTS: (Revision) Cultivated uplands having good surface and internal drainage and moderate erosion in northwestern Illinois, northeastern Iowa, southeastern Minnesota and southwestern Wisconsin. Applicable to similar lands formerly in the Upper Mississippi Loess Hills problem area C10, but now designated as the Northern Mississippi Valley Loess Hills land resource area (M-105).

MONTHLY PRECIPITATION AND RUNOFF (inches)						FENNIMORE, WISCONSIN WATERSHED W-1 AREA—330 ACRES							31.01			
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P ¹ / _Q	.53 .45	.42 .34	2.19 ² / 2.98	1.69 .32	1.09 .21	1.70 .16	3.16 .14	1.98 .11	1.84 .09	.89 .08	2.56 .11	.49 .07	18.54 5.06			
STA AV ³ / _P (38-63) Q	.88 .35	.95 .45	1.87 .98	3.01 .29	3.72 .30	4.90 .48	4.09 .43	3.85 .38	3.58 .27	2.34 .24	2.09 .23	1.07 .21	32.35 4.61			
MEAN P ⁴ / _{73 YR}	1.12	1.13	2.02	2.96	4.00	4.43	3.79	3.46	3.81	2.38	1.99	1.29	32.38			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-16	.08	3-16	.07	3-16	.14	3-16	.40	3-16	.70	3-16	1.03	3-16	1.30	3-12	2.65E
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963	8-6 1951	1.69	8-6 1951	1.13	8-6 1951	1.53	7-15 1950	2.61	7-15 1950	2.69	7-15 1950	2.69	7-15 1950	2.69	7-15 1950	2.86
Notes: Quality of records: Monthly P and Q excellent. Watershed conditions: Generally about half in 3-yr rotation of corn, grain, and hay; 1963 cover corn, 26%; grain, 12%; hay, 12%; pasture, 34%; idle lands, 9%; roads and building sites, 7%. 1/ Precipitation is arithmetic average of 9 recording rain gages. 2/ Snow water equivalent on Mar. 14 was 1.88 in. and had completely melted by Mar. 20. 3/ Precipitation records began June 1938. Runoff records began July 1938. 4/ Mean P based on 73-yr (1891-1963) U. S. Weather Bureau record period at Lancaster, Wis.																

1963 DAILY AIR TEMPERATURE (degrees F)											FENNIMORE, WISCONSIN WATERSHED W-1																31.01	
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC					
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN				
1	25	16	33	2	33	02	66	51	60	27	81	47	100	65	90	60	80	52	79	50	46	26	28	14				
2	33	22	34	-8	40	25	78	57	67	45	86	61	84	58	81	60	80	62	80	48	46	23	21	8				
3	30	23	12	-12	44	20	64	29	71	47	85	63	71	52	80	62	74	56	68	44	61	31	23	20				
4	28	24	41	12	36	30	48	24	74	48	91	64	80	47	82	57	65	54	70	41	54	38	26	24				
5	29	25	37	17	30	22	57	26	66	42	89	63	74	49	75	60	71	48	83	53	55	44	30	26				
6	29	20	41	32	33	21	64	35	73	41	90	65	80	60	82	65	72	50	92	61	58	43	32	25				
7	36	20	32	18	34	18	50	35	80	52	93	63	80	60	87	61	80	59	72	51	58	37	45	25				
8	40	20	22	12	37	12	45	33	84	67	89	63	78	52	86	64	81	58	74	47	58	34	30	27				
9	35	28	24	12	31	6	50	27	80	57	84	62	80	50	84	62	86	64	81	46	61	44	28	16				
10	31	14	22	15	33	9	48	23	57	42	75	54	86	51	83	50	82	58	76	50	54	35	22	13				
11	17	11	17	-1	35	29	55	30	58	38	56	43	87	58	85	64	70	64	74	48	46	30	22	20				
12	13	-7	22	-4	40	30	53	30	50	41	70	43	84	57	79	64	67	41	66	41	36	32	21	3				
13	1	-16	21	4	36	21	59	28	73	48	83	53	70	62	69	50	62	35	73	36	37	28	3	-5				
14	-8	-22	14	-6	37	18	64	33	62	44	70	50	79	56	73	41	69	35	78	43	41	25	9	-6				
15	-2	-24	14	-7	38	20	72	38	65	41	76	49	86	53	79	49	78	44	82	50	52	28	8	-6				
16	12	-19	27	10	48	34	75	49	72	39	74	54	91	62	81	54	81	52	68	56	60	39	11	-10				
17	19	-8	37	26	39	30	72	41	68	49	79	52	87	66	70	50	82	68	70	55	58	44	8	-5				
18	17	-1	45	26	38	30	50	30	64	48	81	52	88	64	72	42	85	68	70	55	53	34	1	-10				
19	-1	-9	34	19	34	27	64	42	58	40	80	59	84	64	78	44	76	55	65	53	57	36	0	-12				
20	-2	-10	19	-9	32	26	63	33	68	35	66	44	82	60	86	51	66	47	65	53	47	41	-2	-16				
21	0	-23	0	-15	35	20	53	28	48	40	74	37	85	62	86	58	68	47	71	59	56	40	6	-14				
22	7	-9	12	0	45	16	38	33	50	32	79	38	90	62	85	58	62	40	79	60	60	28	6	-12				
23	-6	-31	22	2	69	32	42	32	62	30	86	48	88	64	89	64	63	44	84	61	41	26	21	-5				
24	5	-14	24	2	69	44	54	29	67	38	90	53	88	60	68	57	70	50	71	58	36	19	40	19				
25	7	-11	10	-6	58	34	55	42	71	43	91	54	86	63	76	51	74	52	71	53	43	29	37	31				
26	6	-10	10	4	52	31	67	36	76	45	92	69	86	66	81	48	75	48	69	49	34	29	34	23				
27	0	-11	26	5	66	37	67	45	70	54	92	62	84	66	66	55	79	53	60	38	51	30	23	2				
28	10	-14	30	4	63	32	65	52	67	51	89	57	80	62	72	60	58	44	54	34	43	33	16	-3				
29	13	-2	-----	-----	67	44	67	38	68	47	94	60	85	58	77	58	59	40	54	30	34	24	2	-8				
30	12	3	-----	-----	74	40	50	32	78	47	98	64	84	62	70	52	74	44	60	36	30	14	8	-9				
31	10	-11	-----	-----	65	37	-----	-----	80	52	-----	-----	84	63	72	52	-----	-----	46	37	-----	-----	14	-7				
AV.	14	-1	24	6	45	25	59	36	67	44	83	55	84	59	79	56	73	51	69	48	49	32	18	5				
MEAN	6.7	14.9	35.2	46.9	55.7	68.8	71.3	71.3	67.2	62.0	67.2	62.0	67.2	62.0	67.2	62.0	67.2	62.0	67.2	62.0	67.2	62.0	67.2	62.0				
STA AV	23	8	28	12	37	21	55	34	66	46	76	56	81	59	79	58	71	49	61	40	42	26	28	14				
NOTES: TEMPERATURE DATA TAKEN FROM HYGROTHERMOGRAPH CHECKED WEEKLY WITH MAXIMUM AND MINIMUM THERMOMETERS. STATION AVERAGE IS AVERAGE FOR 24-YR PERIOD (1940-63).																												

1963 DAILY PRECIPITATION (inches)						FENNIMORE, WISCONSIN WATERSHED W-1 31.01						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.04	.00	.00	.18	.54	.00	.00	.12S
3	.00	.00	.00	.00	.02	.00	.06	.00	.00	.00	.00	.00
4	.00	.00	.06S	.00	.00	.04	.00	.00	.00	.00	.00	.00
5	.00	.00	.58S	.00	.00	.00	.26	.27	.00	.00	.00	.00
6	.00	.00	.06S	.00	.00	.00	.03	.00	.00	.00	.00	.00
7	.00	.00	.00	.17	.00	.33	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.37	.00	.00	.00	.00	.00	.00
9	.00	.03S	.00	.00	.00	.62	.00	.09	.00	.00	.35	.00
10	.00	.08S	.00	.00	.64	.00	.00	.00	.02	.00	.00	.00
11	.19S	.00	.12S	.00	.06	.00	.00	.00	.15	.00	.00	.20S
12	.05S	.00	.00	.00	.14	.00	.22	.00	.02	.00	.00	.00
13	.00	.00	.00	.00	.10	.15	.08	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.07S	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
16	.06S	.00	.37	.16	.00	.00	.00	.09	.00	.35	.00	.00
17	.03S	.00	.00	.00	.00	.00	.27	.00	.57	.00	.09	.15S
18	.03S	.06S	.18	.20	.00	.00	1.02	.00	.00	.27	.00	.00
19	.00	.02S	.56	.00	.02	.19	.65	.00	.28	.00	.00	.02S
20	.00	.00	.00	.00	.03	.00	.00	.00	.03	.00	.23	.00
21	.06S	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.24	.00	.00	.07	.00	.00	.00	1.87	.00
23	.00	.00	.00	.04	.00	.00	.00	.22	.00	.00	.02	.00
24	.00	.00	.00	.07	.00	.00	.00	.00	.09	.00	.00	.00
25	.00	.00	.17	.14	.00	.00	.00	.00	.00	.24	.00	.00
26	.00	.00	.09	.17	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.16S	.00	.00	.00	.00	.00	.36	.00	.00	.00	.00
28	.00	.00	.00	.00	.04	.00	.00	.77	.14	.00	.00	.00
29	.00	.00	.00	.50	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	-----	.00	.00	.00	.00	.50	.00	.00	.00	.00	.00
31	.11S	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00
TOTAL	.53	.42	2.19	1.69	1.09	1.70	3.16	1.98	1.84	.89	2.56	.49
STA AV	.88	.95	1.87	3.01	3.72	4.90	4.12	3.82	3.30	2.38	2.06	1.08

NOTES: PRECIPITATION VALUES, APRIL 7 TO NOV. 23, ARE ARITHMETIC AVERAGE OF 9 RECORDING GAGES. REST OF YEAR ARITHMETIC AVERAGE OF R-1, R-6, R-8. ALL PRECIPITATION DEC., JAN., AND FEB. WAS SNOW. STA AV IS 25-YR AVERAGE (1939-1963).

1963 MEAN DAILY DISCHARGE (cfs)						FENNIMORE, WISCONSIN WATERSHED W-1 31.01						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.218	.176	.143	.217	.103	.073	.060	.049	.037	.037	.043	.036
2	.191	.182	.166	.213	.100	.073	.060	.050	.073	.037	.042	.035
3	.191	.187	.191	.209	.097	.073	.060	.053	.051	.037	.040	.035
4	.191	.191	.218	.207	.093	.073	.060	.055	.049	.037	.037	.033
5	.191	.191	.208	.202	.090	.073	.060	.060	.043	.035	.037	.033
6	.218	.191	.197	.198	.087	.073	.060	.057	.037	.032	.037	.032
7	.218	.191	.187	.195	.087	.072	.060	.054	.037	.029	.037	.030
8	.218	.191	.177	.191	.087	.104	.060	.050	.037	.029	.037	.030
9	.218	.191	.166	.184	.087	.118	.060	.047	.037	.029	.037	.029
10	.218	.191	.166	.177	.139	.073	.060	.044	.037	.030	.058	.029
11	.218	.191	.166	.170	.103	.073	.060	.042	.037	.032	.037	.028
12	.218	.187	.164	.164	.096	.073	.060	.037	.037	.033	.037	.028
13	.218	.184	2.772	.157	.103	.073	.060	.037	.037	.035	.037	.028
14	.218	.180	4.158	.150	.100	.073	.060	.037	.037	.035	.037	.026
15	.218	.177	2.772	.143	.098	.073	.060	.037	.037	.035	.037	.026
16	.218	.173	13.721	.128	.096	.073	.060	.058	.037	.037	.037	.026
17	.218	.169	4.158	.114	.093	.073	.060	.054	.087	.054	.037	.028
18	.218	.166	1.317	.101	.091	.069	.146	.049	.037	.044	.037	.029
19	.218	.160	6.930	.111	.089	.067	.132	.049	.054	.049	.037	.030
20	.218	.154	.218	.103	.087	.064	.060	.043	.053	.037	.049	.032
21	.218	.148	.218	.103	.087	.060	.060	.037	.037	.037	.037	.033
22	.211	.143	.218	.129	.087	.064	.060	.037	.037	.037	.310	.035
23	.204	.143	.247	.114	.069	.069	.054	.042	.037	.037	.046	.037
24	.197	.143	.263	.104	.087	.073	.049	.051	.037	.037	.043	.037
25	.190	.143	.304	.118	.087	.072	.043	.037	.037	.050	.049	.037
26	.182	.143	.279	.114	.087	.069	.037	.043	.037	.037	.043	.037
27	.175	.143	.231	.096	.087	.068	.042	.046	.037	.037	.037	.037
28	.166	.147	.218	.087	.083	.067	.044	.150	.036	.035	.037	.037
29	.166	-----	.191	.151	.080	.064	.049	.043	.035	.037	.037	.037
30	.166	-----	.191	.103	.076	.062	.049	.043	.035	.039	.037	.037
31	.172	-----	.218	-----	.073	-----	.049	.037	-----	.042	-----	.037
MEAN	.203	.171	1.333	.148	.091	.073	.061	.049	.041	.037	.049	.032
INCHES	.455	.345	2.981	.321	.204	.158	.137	.110	.088	.083	.106	.072

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.003. RECORDS ARE EXCELLENT. SOME PERIODS OF WINTER RECORDS ARE PARTIALLY ESTIMATED DUE TO ICE ON CONTROL AND IN WELL.

1963			SELECTED RUNOFF EVENTS				FENNIMORE, WISCONSIN				WATERSHED W-1		31.01
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
Event of July 26, 1940													
	9 RG 1/			RG	R-2								
6-26	.00	.0021	7-26	1514	.00	.00	7-26	1516	.0010	.0000			
6-27	.16	.0021		1518	7.05	.47		1524	.0271	.0014			
6-28	.16	.0024		1523	3.00	.72		1536	.0651	.0098			
6-29-30	.00	.0054		1526	.80	.76		1540	.1053	.0155			
7- 1	.00	.0022		1530	1.65	.87		1544	.1429	.0237			
7-2-9	.00	.0128		1544	3.43	1.67		1546	.1837	.0291			
7-10	2.05	.0175		1550	2.00	1.87		1548	.2724	.0366			
7-11	.84	.0290		1553	3.60	2.05		1550	.4740	.0490			
7-12	.00	.0024		1600	1.03	2.17		1555	.7830	.1001			
7-13-14	.00	.0042		1606	1.50	2.32		1558	.8370	.1409			
7-15	.00	.0018		1615	1.00	2.47		1600	.8760	.1695			
7-16-23	.00	.0128		1618	2.00	2.57		1602	.8220	.1981			
7-24	.00	.0013		1622	.60	2.61		1606	.7800	.2516			
7-25	.38	.0016		1637	2.04	3.12		1610	.6930	.3008			
7-26	2/1.89	3/.0173		1650	.37	3.20		1615	.6120	.3552			
				1710	.09	3.23		1620	.5490	.4036			
				1800	.05	3.27		1625	.4830	.4466			
								1630	.4380	.4850			
				RG	R-7			1640	.3870	.5538			
				1515	.00	.00		1700	.2870	.6660			
				1523	4.65	.62		1705	.2570	.6887			
				1530	1.29	.77		1710	.2175	.7084			
				1535	2.40	.97		1720	.1500	.7392			
				1545	3.90	1.62		1730	.0954	.7595			
				1555	2.10	1.97		1740	.0635	.7726			
				1605	.90	2.12		1750	.0450	.7815			
				1617	1.00	2.32		1800	.0329	.7880			
				1619	2.10	2.39		1810	.0234	.7927			
				1624	.48	2.43		1820	.0180	.7962			
				1637	1.80	2.82		1900	.0062	.8036			
				1650	.37	2.90		2000	4/.0019	.8072			
				1800	.06	2.97		2400	.0002	.8099			
				RG	R-1	3.18							
				RG	R-3	3.05							
				RG	R-4	3.00							
				RG	R-5	3.20							
				RG	R-6	3.10							
				RG	R-8	3.03							
				RG	R-9	3.26							
				9 RG	AVG 1/	3.12							
Event of June 3, 1943													
	9 RG 1/			RG	R-3								
5- 5	.60	.0138	6-3	1718	.00	.00	6-3	1720	.0022	.0000			
5- 6	.08	.0138		1723	4.80	.40		1722	.0032	.0001			
5-7-8	.00	.0276		1732	4.33	1.05		1730	.0146	.0012			
5- 9	.07	.0138		1738	.30	1.08		1732	.0393	.0020			
5-10-14	.00	.0690						1734	.0690	.0037			
5-15	1.39	.0246		RG	R-8			1736	.1854	.0077			
5-16	.02	.0202	6-3	1718	0.00	0.00		1739	.3060	.0200			
5-17	.00	.0130		1721	2.00	.10		1742	.3330	.0358			
5-18	.00	.0086		1727	4.00	.50		1744	.3630	.0474			
5-19-22	.00	.0296		1729	7.50	.75		1745	.4350	.0541			
5-23	.24	.0132		1733	3.60	.99		1746	.5520	.0623			
5-24	.24	.0248		1740	.26	1.02		1747	.6180	.0721			
5-25	.00	.0158						1748	.5880	.0822			
5-26	.00	.0089						1750	.5700	.1015			
5-27	.00	.0074						1752	.4890	.1192			
5-28	.00	.0068		RG	R-1	1.02		1756	.3960	.1488			
5-29	.05	.0076		RG	R-2	1.10		1800	.3120	.1720			
5-30	.38	.0201		RG	R-4	1.07		1804	.2409	.1904			
5-31	.30	.0251		RG	R-5	1.04		1808	.1881	.2045			
6- 1	.23	.0208		RG	R-6	1.05		1812	.1290	.2151			
Continued on next page													
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 332.750. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHED IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 31.1-5. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 9. 2/ RAINFALL FROM 0420 TO 1430. 3/ RUNOFF TO 1516. 4/ RUNOFF ENDED 1100 ON 7-27-40.													

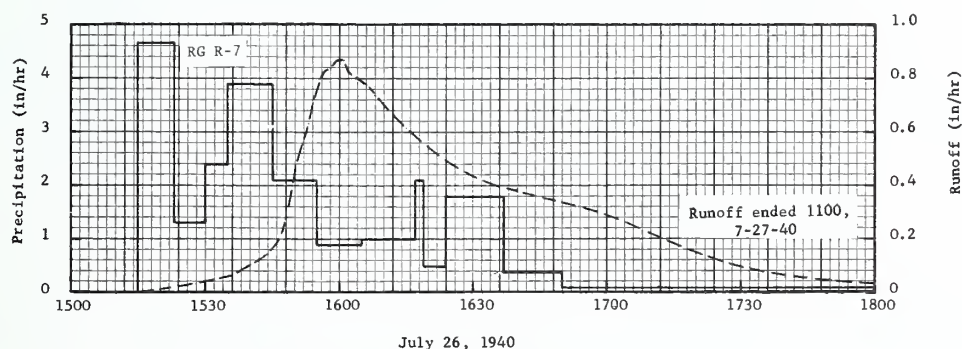
1963 SELECTED RUNOFF EVENTS			FENNIMORE, WISCONSIN WATERSHED W-1 31.01							
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of June 3, 1943—Continued										
6- 2	2.22	.2804	RG	R-7	1.05		6-3	1814	.1050	.2190
6- 3	.00	1/.0391	RG	R-9	1.08			1820	.0858	.2285
Watershed conditions: 29% corn, just coming up; 12% grain, 8-10 inches; 30% hay, 15-20 inches; 23% pasture; 6% roads and buildings.			9 RG	AVG 2/	1.06			1825	.0651	.2348
								1830	.0492	.2396
								1835	.0405	.2433
								1840	.0333	.2464
								1850	.0236	.2511
								1900	.0176	.2545
								1920	.0099	.2590
								1940	.0062	.2617
								2000	.0049	.2636
								2100	.0035	.2678
								2300	3/.0020	.2732
Event of June 22, 1944										
5-22	.00	.0157	6-22	RG	R-5	.00	6-22	1946	.0011	.0000
5-23	.44	.0203		1940	.00	.09		1954	.0033	.0003
5-24	.33	.0157		1949	.60	.29		2000	.0192	.0011
5-25-29	.00	.0785		1954	2.40	.93		2003	.0348	.0024
5-30	.08	.0157		2002	4.80	1.21		2006	.0987	.0055
5-31	.05	.0157		2012	1.68			2009	.1960	.0127
6- 1	.88	.0233		2018	.30	1.24		2010	.1954	.0160
6-2-4	.00	.0471		RG	R-6	.00		2014	.2246	.0301
6- 5	.21	.0157		1936	.00	.15		2015	.2504	.0341
6-6-7	.00	.0314		1948	.75			2018	.4080	.0510
6- 8	.36	.0183		1953	3.48	.44		2020	.4500	.0653
6- 9	.44	.0169		2000	6.43	1.19		2021	.4620	.0729
6-10	.00	.0157		2008	1.95	1.45		2022	.4410	.0804
6-11	.13	.0157		2012	1.35	1.54		2023	.4170	.0876
6-12	1.81	.0691		RG	R-1	1.55		2024	.4260	.0946
6-13	.44	.0417		RG	R-2	1.44		2026	.4650	.1093
6-14	.00	.0223		RG	R-3	1.39		2028	.5070	.1255
6-15	.75	.0340		RG	R-4	1.61		2029	.5100	.1340
6-16	.00	.0147		RG	R-7	1.51		2030	.5010	.1424
6-17	1.37	.3492		RG	R-8	1.53		2034	.4560	.1746
6-18-21	.00	.0896		RG	R-9	1.26		2042	.3090	.2255
6-22	4/.08	5/.0217		9 RG	AVG 2/	1.45		2048	.2244	.2522
Watershed Conditions: 32% corn, 4-6 inches; 18% small grain; 24% hay; 20% pasture; 6% roads and farmsteads.								2054	.1600	.2714
								2100	.1168	.2852
								2106	.0900	.2955
								2112	.0705	.3034
								2118	.0552	.3097
								2130	.0369	.3189
								2142	.0272	.3253
								2200	.0174	.3318
								2220	.0113	.3366
								2300	.0054	.3418
Event of June 21, 1954								2400	.0029	.3457
								0100	.0020	.3481
								0300	.0017	.3518
								2400	3/.0013	.3833
5-21-22	.00	.0054	6-21	RG	R-7	.00	6-21	1400	.0003	.0000
5-23	.00	.0025		1350	.12	.03		1430	.0008	.0003
5-24	.00	.0023		1405	.48	.11		1439	.0114	.0009
5-25	.00	.0021		1415	.08	.12		1448	.2660	.0193
5-26	.16	.0021		1423	3.50	.47		1451	.3240	.0341
5-27	.67	.0059		1429				1456	.6270	.0739
5-28	1.54	.0226		1435	3.00	1.12		1500	.7140	.1187
5-29	.00	.0027		1439	.30	1.13		1512	.4650	.2379
5-30	.03	.0027		1441	4.20	1.48		1518	.3510	.2787
5-31	.35	.0027		1446	.60	1.52		1530	.2430	.3376
Continued on next page										

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 332.750. 1/ RUNOFF TO 1720. 2/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 9. 3/ NORMAL BASE FLOW. 4/ RAINFALL FROM 1220 TO 1230. 5/ RUNOFF TO 1946.

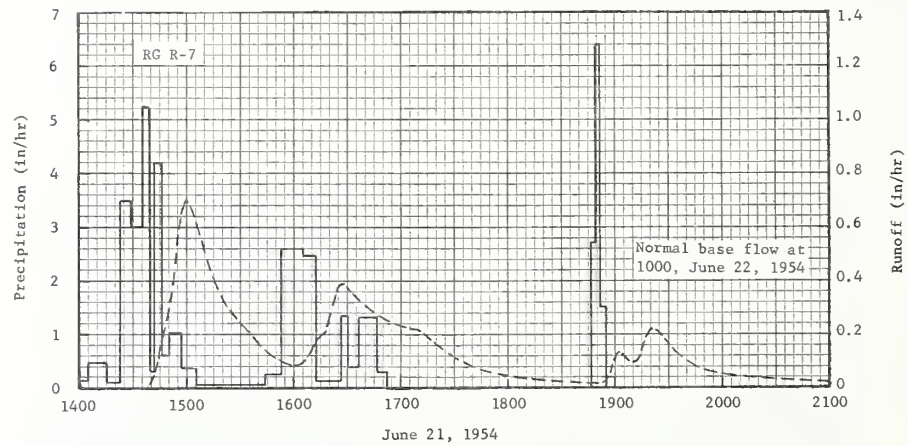
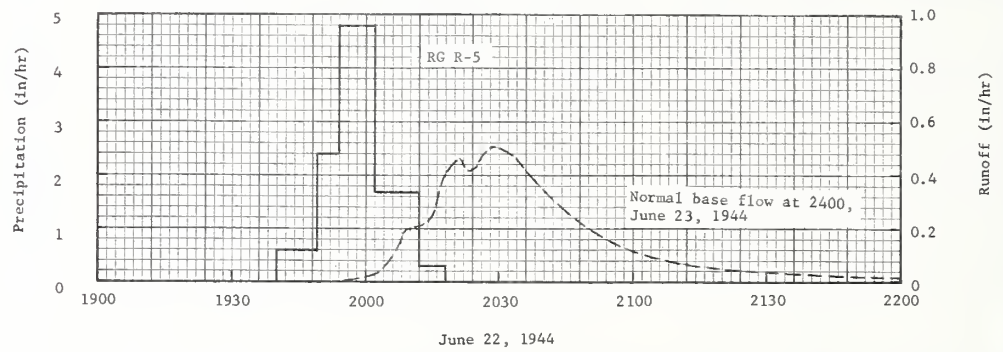
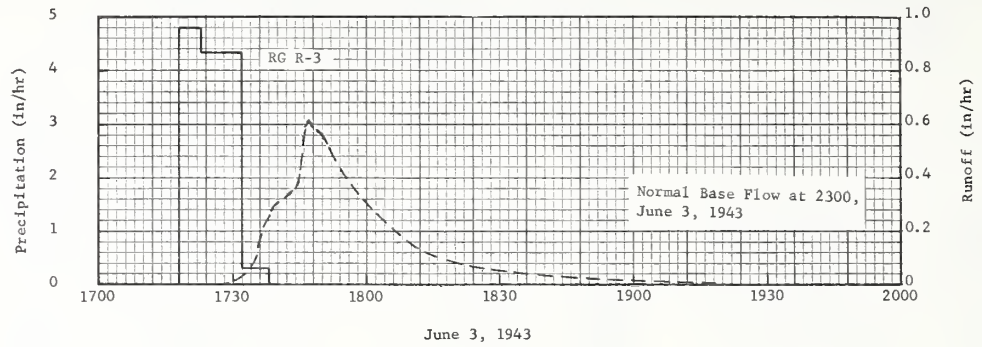
1963 SELECTED RUNOFF EVENTS			FENNIMORE, WISCONSIN WATERSHED W-1							
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of June 21, 1954—Continued										
6- 1	.57	.0073	6-21	1457	1.03	1.64	6-21	1542	.1550	.3775
6- 2	.66	.0076		1505	.38	1.69		1554	.0997	.4023
6- 3	1.47	.0257		1543	.02	1.70		1600	.0870	.4116
6- 4	.00	.0063		1553	.24	1.74		1606	.1070	.4209
6- 5	.00	.0053		1605	2.60	2.26		1609	.1340	.4269
6-6-9	.00	.0168		1612	2.48	2.55		1615	.1950	.4438
6-10-14	.00	.0175		1626	.13	2.58		1620	.2520	.4618
6-15	.42	.0042		1630	1.35	2.67		1624	.3660	.4826
6-16	.10	.0042		1636	.40	2.71		1627	.3930	.5016
6-17	.00	.0042		1646	1.32	2.93		1648	.2690	.6152
6-18-19	.00	.0070		1652	.30	2.96		1700	.2240	.6648
6-20	1.98	.1043		1847	.01	2.98		1712	.2060	.7081
6-21	1/.74	2/.042		1849	2.70	3.07		1724	.1400	.7424
				1852	6.40	3.39		1740	.0807	.7712
				1854	1.50	3.44		1800	.0435	.7913
				RG	R-1	3.15		1840	.0183	.8106
				RG	R-2	3.40		1850	.0165	.8135
				RG	R-3	3.38		1855	.0249	.8152
				RG	R-4	3.47		1901	.1240	.8219
				RG	R-5	3.25		1903	.1300	.8261
				RG	R-6	3.79		1911	.0942	.8411
				RG	R-8	3.59		1916	.1600	.8511
				RG	R-9	3.58		1921	.2180	.8675
								1924	.2090	.8782
				9 RG	AVG 3/	3.45		1936	.1190	.9111
								1948	.0744	.9300
								2000	.0522	.9424
								2100	.0171	.9736
								2200	.0061	.9844
								2300	.0028	.9886
							6-22	2400	.0018	.9909
								1000	4/.0007	1.0004

Watershed Conditions: 35% corn, 10% small grain, 22% hay, 27% short pasture, 6% roads and farmsteads.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 332.750. 1/ RAINFALL FROM 0245 TO 0950. 2/ RUNOFF FROM 0001 TO 1400. 3/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 9. 4/ NORMAL BASE FLOW



FENNIMORE, WISCONSIN WATERSHED W-1



FENNIMORE, WISCONSIN WATERSHED W-1

FENNIMORE, WISCONSIN WATERSHED W-2

LOCATION: Grant County, Wis.; 1 mile northeast of Fennimore; Blue River Branch, Wisconsin River Basin.

AREA: 22.8 acres

SLOPES:	Slope--Percent	0-2	2-6	6-10
	Percent of area	5	47	48

SOILS: (Revision) Thick to moderately thick silt mantle over bedrock or residual clays from limestone plus an accumulative silty material in natural drainageways.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Tama silt loam	73	10	Moderate medium granular	Moderate	Moderate, medium subangular blocky	Moderate	48	Moderate	Medium
Dubuque silt loam	25	8	Moderate medium granular	Moderate	Moderate, medium subangular blocky	Moderate	30	Moderate	Medium
Judson silt loam	2	24	Moderate medium granular	Moderate	-----	-----	24	Moderate	Medium

EROSION:	Erosion class	+	2	3
	Percent of area	2	66	32

LAND CAPABILITY:	Class	II	III
	Percent of area	65	35

GEOLOGY: Calcitic cherty dolomites and sandy calcitic dolomites of the Galena formation of Middle Ordovician age outcrop in the watershed. The formation is overlain by several inches to 60+ inches of soil, loess, or clay-chert residuum, and underlain by the Ordovician Decorah formation. The watershed is on the southwest flank of the Wisconsin Arch, the rocks dipping 7 to 10 feet per mile to the south southwest. Source of data: R. N. Cheetham, Geologist, SCS.

SURFACE DRAINAGE: (Revision) Good; length of principal waterway approximately 1000 ft., a natural watershed with surface flow to two distinct waterways which join about 100 ft. above the gaging station.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: (Revision) Runoff: 16-inch broad crested V-notch concrete weir with 3 to 1 side slopes equipped with FW-1 recorder, with 6-hr. time scale. Precipitation: Recording rain gage with 12-hr. time scale.

WATERSHED CONDITIONS: Mixed cover area which since 1947 was mostly hay, pasture and idle lands.

GENERALLY REPRESENTS: (Revision) Cultivated uplands having good surface and internal drainage and moderate erosion in northwestern Illinois, northeastern Iowa, southeastern Minnesota and southwestern Wisconsin. Applicable to similar lands formerly in the Upper Mississippi Loess Hills problem area C10, but now designated as the Northern Mississippi Valley Loess Hills land resource area (M-105).

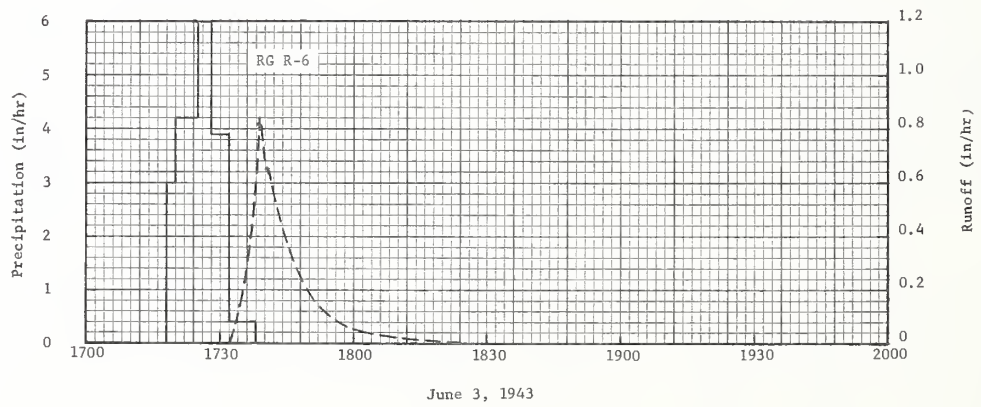
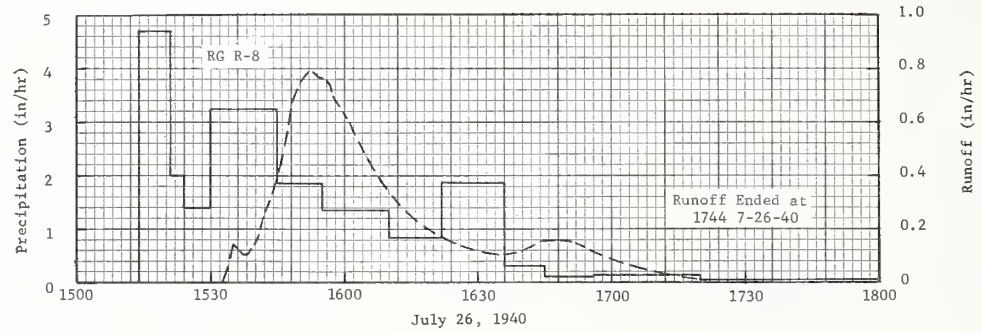
MONTHLY PRECIPITATION AND RUNOFF (inches)						FENNIMORE, WISCONSIN AREA - 22.8 ACRES							31.02			
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/ Q	.44 .00	.40 .05E	2.102/ 2.95	1.76 .00	1.19 .00	1.75 .00	3.28 .00	1.91 .00	1.89 .00	.90 .00	2.53 .00	.44 .00	18.59 3.00		
STA AV ³ /P (38-63) Q		.87 .16	.94 .28	1.83 .75	3.03 .03	3.78 .01	4.99 .14	4.16 .13	3.85 .09	3.58 .02	2.34 T	2.10 .00	1.05 .01	32.52 1.62		
MEAN P 4/ 73 YR		1.12	1.13	2.02	2.96	4.00	4.43	3.79	3.46	3.81	2.38	1.99	1.29	32.38		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-16	.08	3-16	.08	3-16	.14	3-16	.33	3-16	.63	3-16	.98	3-15	1.33E	3-13	2.34E
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963	6-28 1945	2.68	8-6 1951	1.39	8-6 1951	1.72	7-15 1950	2.25	7-15 1950	2.26	7-15 1950	2.26	7-15 1950	2.26	3-24 1959	3.77

Notes: Quality of records: Monthly P and Q, excellent. Watershed conditions: Hay, pasture and idle lands. 1/ Precipitation data obtained from R-6. 2/ Snow water equivalent on Mar. 14 was 1.88 inches and had completely melted by Mar. 20. 3/ Precipitation records began June 1938. Runoff records began July 1938. 4/ Mean P based on 73 yr (1891-1963) U.S. Weather Bureau record period at Lancaster, Wis.

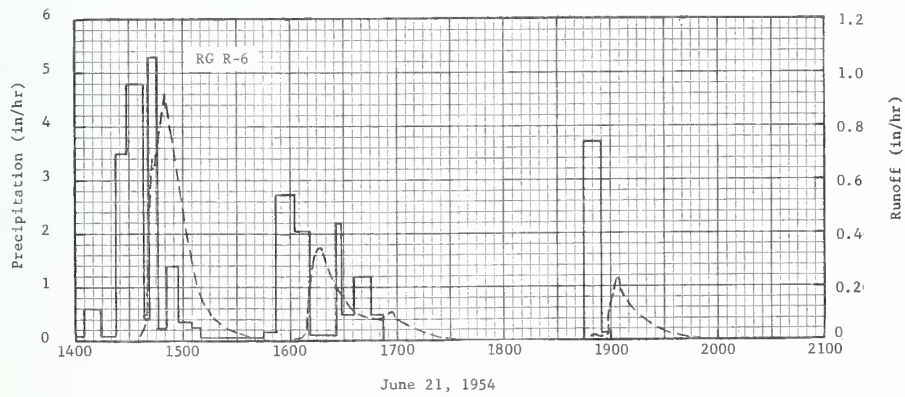
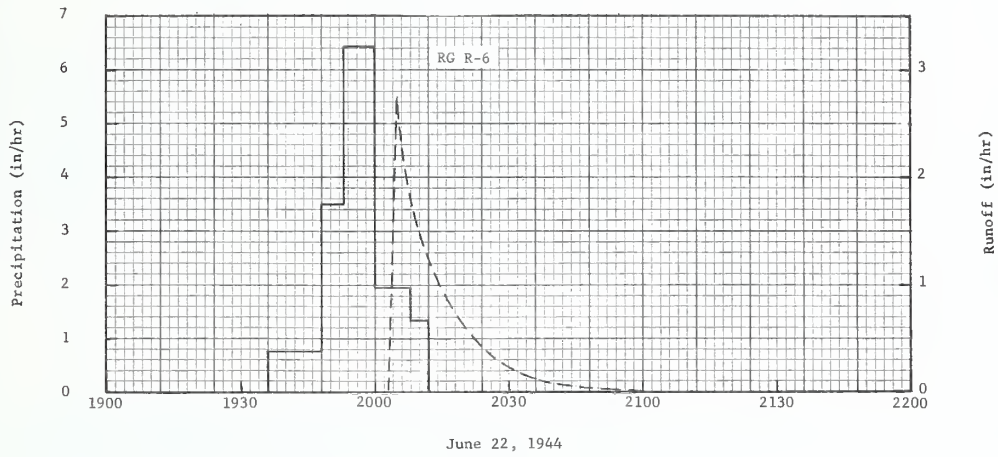
1963			SELECTED RUNOFF EVENTS				FENNIMORE, WISCONSIN			WATERSHED W-2		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
Event of July 26, 1940												
	RG R-6			RG	R-8 ^{2/}							
6-27	.19	.0000	7-26	1514	.00	.00	7-26	1533	.0000	.0000		
6-28	.16	.0000		1521	4.71	.55		1535	.1440	.0027		
7-10	2.25	.0000		1524	2.00	.65		1536	.1210	.0049		
7-11	.82	.0000		1530	1.40	.79		1538	.1044	.0086		
7-25	.38	.0000		1545	3.24	1.60		1540	.1454	.0127		
7-26	1/1.82	.0000		1555	1.86	1.91		1541	.1900	.0155		
				1610	1.36	2.25		1542	.2604	.0193		
				1622	.85	2.42		1544	.3380	.0292		
				1636	1.88	2.86		1546	.4716	.0427		
				1645	.33	2.91		1548	.6710	.0617		
				1656	.11	2.93		1550	.7460	.0853		
				1720	.13	2.98		1552	.7890	.1109		
				1830	.04	3.03		1556	.7590	.1624		
Watershed conditions: 24% corn, 6-8 ft.; 24% small grain, some cut; 52% hay, 14-16 in.												
								1600	.6350	.2080		
								1605	.4750	.2542		
								1610	.3340	.2878		
								1615	.2464	.3120		
								1620	.1862	.3300		
								1630	.1220	.3549		
								1635	.1040	.3643		
								1640	.1170	.3735		
								1644	.1540	.3826		
								1648	.1582	.3931		
								1652	.1520	.4036		
								1700	.0910	.4192		
								1710	.0400	.4298		
								1720	.0126	.4338		
								1730	.0035	.4351		
								1740	.0012	.4354		
								1744	.0000	.4354		
Event of June 3, 1943												
	RG R-6			RG	R-6							
5- 5	.60	.0000	6-3	1718	.00	.00	6-3	1732	.0000	.0000		
5- 6	.05	.0000		1720	3.00	.10		1738	.5480	.0081		
5- 9	.06	.0000		1725	4.20	.45		1739	.8440	.0197		
5-15	1.43	.0000		1728	6.00	.75		1740	.6700	.0323		
5-16	.03	.0000		1732	3.90	1.01		1742	.5350	.0528		
5-23	.25	.0000		1738	.40	1.05		1744	.4160	.0687		
5-24	.25	.0000						1747	.2930	.0864		
5-29	.05	.0000						1750	.1900	.0985		
5-30	.34	.0000						1753	.1292	.1065		
5-31	.30	.0000						1756	.0900	.1120		
6- 1	.21	.0000						1759	.0621	.1158		
6- 2	2.09	.0522						1805	.0317	.1205		
								1810	.0157	.1225		
								1815	.0088	.1235		
								1820	.0052	.1241		
								1830	.0028	.1248		
								1845	.0005	.1251		
								1900	.0000	.1251		
Watershed conditions: 24% corn, just coming up; 3% small grain; 73% hay												
Event of June 22, 1944												
	RG R-6			RG	R-6							
5-23	.62	.0000	6-22	1936	.00	.00	6-22	2003	.0000	.0000		
5-24	.34	.0000		1948	.75	.15		2005	2.7400	.1141		
5-30	.06	.0000		1953	3.48	.44		2006	2.2000	.1505		
5-31	.07	.0000		2000	6.43	1.19		2007	1.9800	.1862		
6- 1	.97	.0000		2008	1.95	1.45		2008	1.6400	.2153		
6- 5	.16	.0000		2012	1.35	1.54		2010	1.4800	.2673		
6- 8	.38	.0000						2014	1.0600	.3509		
6- 9	.50	.0000						2018	.7530	.4108		
6-11	.10	.0000						2020	.6310	.4339		
6-12	1.86	.0000						2024	.4210	.4682		
Continued on next page												
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 22.988. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 31.1-5. 1/ RAINFALL FROM 0410 TO 1430. 2/ INTENSITIES NOT AVAILABLE FOR R-6.												

1963 SELECTED RUNOFF EVENTS			FENNIMORE, WISCONSIN				WATERSHED W-2			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of June 22, 1944—Continued										
6-13	.45	.0000					2030		.2360	.5010
6-15	.78	.0258					2036		.1290	.5187
6-17	1.51	.4945					2042		.0649	.5281
6-22	1/.06	.0000					2050		.0280	.5342
							2100		.0083	.5368
Watershed conditions: 51% corn, poor stand, just up; 8% small grain; 41% hay.							2115		.0028	.5378
							2135		.0000	.5383
Event of June 21, 1954										
	RG R-6			RG	R-6					
5-26	.19	.0000	6-21	1350	.00	.00	6-21	1435	.0000	.0000
5-27	.62	.0000		1405	.08	.02		1439	.0509	.0018
5-28	1.50	.0000		1414	.60	.11		1440	.1284	.0033
5-30	.02	.0000		1423	.07	.12		1442	.6000	.0147
5-31	.37	.0000		1429	3.50	.47		1443	.6830	.0254
6- 1	.59	.0000		1438	4.80	1.19		1444	.6480	.0365
6- 2	.69	.0000		1441	.40	1.21		1448	.8040	.0853
6- 3	1.55	.0000		1446	5.28	1.65		1450	.9260	.1152
6-15	.38	.0000		1451	.24	1.67		1454	.7550	.1720
6-16	.09	.0000		1457	1.40	1.81		1500	.4870	.2331
6-20	2.21	.0083		1505	.38	1.86		1505	.2830	.2652
6-21	2/.75	.0000		1510	.24	1.88		1510	.1584	.2836
Watershed conditions: 49% second year corn after 5 years hay, 51% good pasture.								1515	.1060	.2946
								1520	.0670	.3018
				1552	.17	1.92		1530	.0309	.3095
				1603	2.73	2.42		1540	.0080	.3127
				1611	2.03	2.69		1550	.0032	.3136
				1626	.12	2.72		1600	.0060	.3144
				1629	2.20	2.83		1606	.0128	.3153
				1636	.51	2.89		1609	.0284	.3163
				1646	1.20	3.09		1611	.2230	.3207
				1652	.50	3.14		1614	.3200	.3340
				1845	.01	3.16		1616	.3450	.3451
				1855	3.72	3.78		1618	.3410	.3565
				1900	.12	3.79		1620	.2830	.3669
								1636	.1035	.4179
								1651	.0796	.4403
								1654	.1005	.4448
								1657	.1087	.4500
								1700	.0787	.4547
								1724	.0101	.4707
								1748	.0000	.4723
								1848	.0000	.4723
								1850	.0140	.4725
								1858	.0119	.4740
								1900	.1310	.4764
								1904	.2310	.4887
								1906	.1735	.4954
								1910	.1330	.5057
								1915	.1100	.5158
								1920	.0713	.5234
								1930	.0333	.5321
								1940	.0140	.5361
								2000	.0028	.5385
								2015	.0000	.5389

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 22.988. 1/ RAINFALL FROM 1220 TO 1230. 2/ RAINFALL FROM 0245 TO 1020



FENNIMORE, WISCONSIN WATERSHED W-2



FENNIMORE, WISCONSIN WATERSHED W-2

FENNIMORE, WISCONSIN WATERSHED W-3

LOCATION: Grant County, Wis.; 1 mile northeast of Fennimore, Blue River Branch, Wisconsin River Basin.

AREA: 52.5 acres

SLOPES:	Slope--Percent	2-6	6-10	10-15
	Percent of area	60	24	16

SOILS: (Revision) Thick to moderately thick, silt mantle over bedrock or residual clays from limestone plus an accumulative silty material in natural drainageways.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Tama silt loam	34	10	Moderate medium granular	Moderate	Moderate, medium subangular blocky	Moderate	48	Moderate	Medium
Dubuque silt loam	61	8	Moderate medium granular	Moderate	Moderate, medium subangular blocky	Moderate	30	Moderate	Medium
Judson silt loam	5	24	Moderate medium granular	Moderate	-----	-----	24	Moderate	Medium

EROSION:	Erosion class	+	2	3
	Percent of area	4	46	50

LAND CAPABILITY:	Class	II	III	IV
	Percent of area	39	34	27

GEOLOGY: Calcitic cherty dolomites and sandy calcitic dolomites of the Galena formation of Middle Ordovician age outcrop in the watershed. The formation is overlain by several inches to 60+ inches of soil, loess, or clay-chert residuum, and underlain by the Ordovician Decorah formation. The watershed is on the southwest flank of the Wisconsin Arch, the rocks dipping to 10 feet per mile to the south southwest. Source of data: R. N. Cheetham, Geologist, SCS.

SURFACE DRAINAGE: (Revision) Good; length of principle waterway approximately 2200ft., a natural watershed with surface flow to one main waterway.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: (Revision) Runoff: 30 inch broad crested V-notch concrete weir with 3 to 1 side slopes equipped with FW-1 recorder, with 6-hr. time scale. Precipitation: Two recording rain gages with 12-hr. time scale.

WATERSHED CONDITIONS: Mixed cover area, about 23 percent permanent pasture, rest mostly rotation cropped.

GENERALLY REPRESENTS: (Revision) Cultivated uplands having good surface and internal drainage and moderate erosion in northwestern Illinois, northeastern Iowa, southeastern Minnesota and southwestern Wisconsin. Applicable to similar lands formerly in the Upper Mississippi Loess Hills problem area C10, but now designated as the Northern Mississippi Valley Loess Hills land resource area (M-105).

MONTHLY PRECIPITATION AND RUNOFF (inches)						FENNIMORE, WISCONSIN WATERSHED W-3								31.03
						AREA—52.5 ACRES								
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1962 P1/ Q3/	.42 .00	1.60 .00	2/3.41 .14	2.48 T	5.35 .00	2.69 T	7.28 T	3.69 .00	3.87 T	2.96 .00	.16 .00	.59 .01	34.50 .15	
1963 P4/ Q	.74 .00	.50 .00	5/2.55 2.34	1.69 .00	1.06 .00	1.56 .00	3.23 .00	1.95 .00	1.81 .00	.92 .00	2.47 .00	.63 .00	19.11 2.34	
STA AV ⁶ /P (38-63) Q	.89 .15	.96 .23	1.92 .60	3.02 .01	3.74 .01	4.94 .14	4.11 .13	3.86 .09	3.64 .02	2.36 .01	2.10 .00	1.08 T	32.62 1.39	
MEAN P 7/ 73 YR	1.12	1.13	2.02	2.96	4.00	4.43	3.79	3.46	3.81	2.38	1.99	1.29	32.38	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-16	.09	3-16	.08	3-16	.14	3-16	.33	3-16	.63	3-16	.98	3-16	1.33	3-13	2.34

MAXIMUMS FOR PERIOD OF RECORD

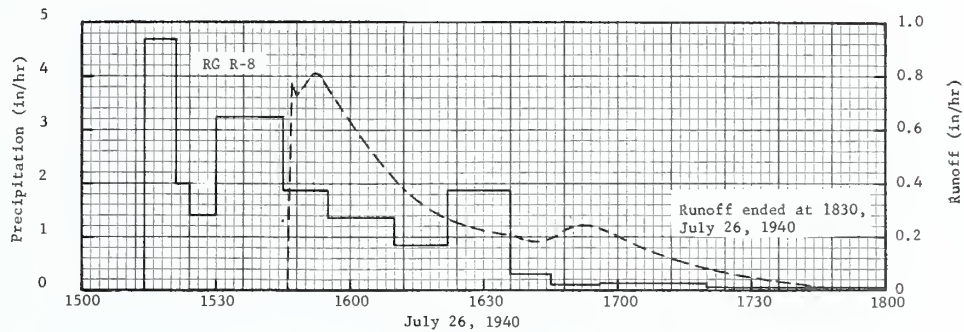
1938 to 1963	6-28 1945	1.63	8-6 1951	1.01	8-6 1951	1.32	7-15 1950	2.38	7-15 1950	2.38	7-15 1950	2.38	7-15 1950	2.38	7-15 1950	2.54
-----------------	--------------	------	-------------	------	-------------	------	--------------	------	--------------	------	--------------	------	--------------	------	--------------	------

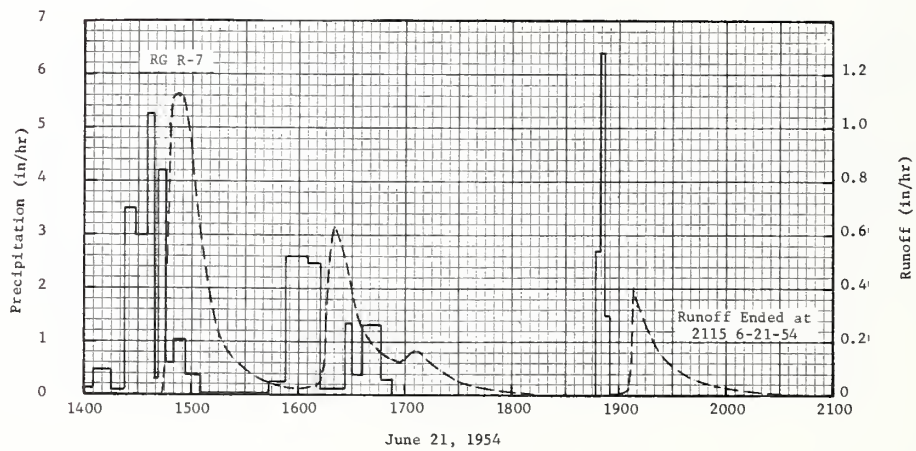
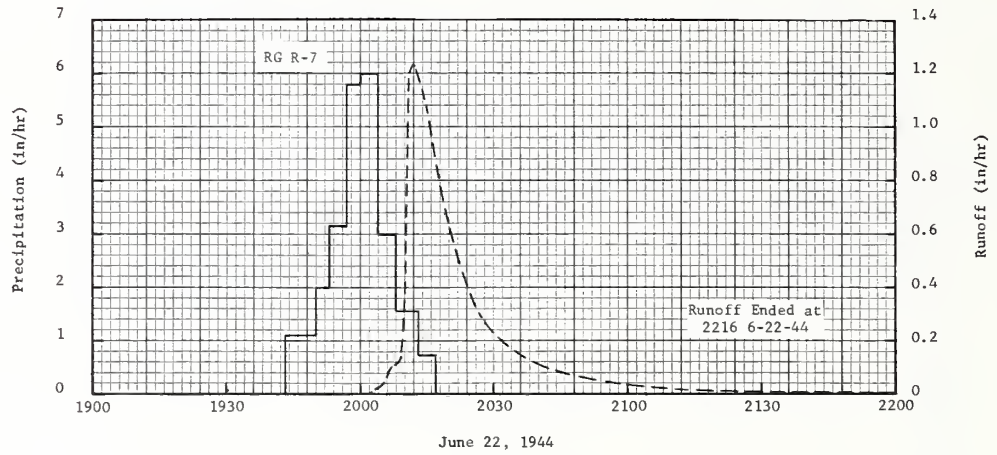
Notes: Quality of records: Monthly P and Q, excellent. Watershed conditions: 23.8%, corn; 7.2%, small grain; 13.9%, hay; 44%, pasture; 3.8%, idle; 7.3%, roads and building sites. 1/ Precipitation is arithmetic average of two recording gages from Apr. 13 to Dec. 4 and R-8 rest of year. 2/ Snow water equivalent on Mar. 16 was 6.39 in., down to 0.56 in. on Mar. 30. 3/ Previously reported values for 1962 for March, Dec., and annual total are revised with new values underlined. 4/ Precipitation is arithmetic average of two recording gages from April 7 to Nov. 23 and R-8 rest of year. 5/ Snow water equivalent on Mar. 14 was 1.88 inches and had completely melted by Mar. 20. 6/ Precipitation records began June 1938. Runoff records began July 1938. 7/ Mean P based on 73-yr (1891-1963) U.S. Weather Bureau record period at Lancaster, Wis.

1963 SELECTED RUNOFF EVENTS						FENNIMORE, WISCONSIN WATERSHED W-3				
ANTECEDENT CONITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of July 26, 1940										
6-27	2 RG 1/ .17	.0000	7-26	RG	R-8	.00	7-26	1546	.0000	.0000
6-28	.17	.0000		1514	.00	.55		1547	.7730	.0065
7-10	2.24	.0000		1521	4.71	.65		1548	.7240	.0189
7-11	.85	.0038		1524	2.00	.79		1550	.7700	.0439
7-25	.38	.0000		1530	1.40	1.60		1552	.8050	.0702
				1545	3.24					
7-26	2/1.77	.0000		1555	1.86	1.91		1553	.8040	.0836
				1610	1.36	2.25		1555	.7500	.1096
				1622	.85	2.42		1605	.5110	.2149
				1636	1.88	2.86		1610	.4150	.2534
				1645	.33	2.91		1615	.3360	.2847
				1656	.11	2.93		1620	.2870	.3107
				1720	.13	2.98		1630	.2200	.3524
				1830	.04	3.03		1640	.1850	.3870
								1642	.1844	.3932
								1645	.1950	.4027
				RG	R-7	2.97		1650	.2400	.4209
				2 RG	AVG 1/ 2.97	3.00		1654	.2420	.4369
								1656	.2310	.4448
								1700	.2050	.4593
								1710	.1344	.4876
								1720	.0826	.5057
								1730	.0470	.5165
								1740	.0238	.5224
								1750	.0113	.5254
								1810	.0026	.5274
								1830	.0000	.5278
Event of June 3, 1943										
5- 5	2 RG 1/ .58	.0000	6-3	RG	R-7	.00	6-3	1732	.0000	.0000
5- 6	.09	.0000		1717	.00	.07		1733	.0321	.0003
5- 9	.07	.0000		1720	1.40	.25		1737	.0865	.0043
5-15	1.44	.0000		1722	5.40	.50		1738	.1214	.0060
5-16	.02	.0000		1726	3.75	.85		1739	.3330	.0098
				1730	5.25					
5-23	.27	.0000		1732	4.50	1.00		1740	.7590	.0189
5-24	.23	.0000		1735	.80	1.04		1741	.7300	.0313
5-29	.06	.0000		1740	.12	1.05		1743	.5850	.0533
5-30	.37	.0000						1746	.4360	.0786
5-31	.34	.0000						1748	.3550	.0918
6- 1	.23	.0000		RG	R-8	1.02		1750	.2870	.1025
6- 2	2.16	.1201		2 RG	AVG 1/ 1.02	1.04		1754	.2100	.1189
								1800	.1370	.1359
								1810	.0756	.1532
								1815	.0550	.1586
								1820	.0439	.1627
								1830	.0250	.1685
								1900	.0056	.1752
								1930	.0013	.1788
								2000	.0000	.1771
Event of June 22, 1944										
5-23	2 RG 1/ .56	.0000	6-22	RG	R-7	.00	6-22	2002	.0000	.0000
5-24	.28	.0000		1943	.00	.13		2004	.0156	.0003
5-30	.10	.0000		1950	1.11	.23		2005	.0317	.0007
5-31	.04	.0000		1953	2.00	.44		2007	.1047	.0029
6- 1	.95	.0000		1957	3.15	.73		2009	.1297	.0069
				2000	5.80					
6- 5	.19	.0000		2004	6.00	1.13		2010	.3820	.0112
6- 8	.37	.0000		2008	3.00	1.33		2011	1.1920	.0243
6- 9	.49	.0000		2013	1.56	1.46		2012	1.2300	.0445
6-11	.14	.0000		2017	.75	1.51		2014	1.1200	.0836
6-12	1.83	.0221						2016	.9750	.1185
6-13	.37	.0008		RG	R-8	1.53		2018	.7810	.1478
6-15	.76	.0065		2 RG	AVG 1/ 1.53	1.52		2020	.6250	.1712
6-17	1.51	.3535						2024	.4175	.2056
6-22	3/.07	.0000						2028	.2780	.2279
								2030	.2340	.2364
Continued on next page										
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 52,937. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 31.1-5. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 7 AND 8. 2/ RAINFALL FROM 0415 TO 1440. 3/ RAINFALL FROM 1220 TO 1230.										

1963			SELECTED RUNOFF EVENTS				FENNIMORE, WISCONSIN				WATERSHED W-3				
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)					
Watershed conditions: 37% corn, 4-6 in.; 3% small grain; 24% hay; 29% pasture; 7% roads and build- ings.			Event of June 22, 1944—Continued				6-22	2036	.1460	.2552					
							2042	.1020	.2674						
							2048	.0710	.2761						
							2100	.0340	.2864						
							2112	.0151	.2911						
							2130	.0042	.2937						
							2216	.0000	.2945						
			Event of June 21, 1954												
			5-26	2 RG 1/ .18	.0000	6-21	RG 1350	R-7 .00	.00	6-21	1444	.0000	.0000		
			5-27	.62	.0000		1405	.12	.03		1449	1.0920	.0520		
5-28	1.58	.0000		1415	.48	.11		1453	1.1320	.1265					
5-30	.05	.0000		1423	.08	.12		1457	1.0620	.2004					
5-31	.35	.0000		1429	3.50	.47		1508	.4330	.3378					
6- 1	.58	.0000		1435	3.00	.77		1512	.3020	.3620					
6- 2	.67	.0000		1439	5.25	1.12		1518	.1985	.3864					
6- 3	1.56	.0000		1441	.30	1.13		1524	.1350	.4028					
6-15	.34	.0000		1446	4.20	1.48		1542	.0605	.4287					
6-16	.10	.0000		1450	.60	1.52		1600	.0287	.4395					
6-20	2.10	.0502		1457	1.03	1.64		1610	.0389	.4449					
6-21	2/.75	.0000		1505	.38	1.69		1615	.1586	.4505					
Watershed conditions: 37% corn, 12% small grain, 11% hay, 33% pasture, 7% roads and farmsteads.				1543	.02	1.70		1617	.4910	.4611					
				1553	.24	1.74		1620	.6310	.4898					
				1605	2.60	2.26		1625	.5440	.5390					
				1612	2.48	2.55		1627	.4880	.5562					
				1626	.13	2.58		1633	.2950	.5953					
				1630	1.35	2.67		1636	.2460	.6088					
				1636	.40	2.71		1642	.1875	.6303					
				1646	1.32	2.93		1650	.1443	.6522					
				1652	.30	2.96		1658	.1216	.6695					
				1847	.01	2.98		1705	.1648	.6864					
	1849	2.70	3.07		1707	.1630	.6919								
	1852	6.40	3.39		1710	.1490	.6997								
	1854	1.50	3.44		1730	.0556	.7341								
			RG	R-8	3.59		1800	.0123	.7487						
			2 RG	AVG 1/	3.52		1830	.0022	.7517						
							1850	.0011	.7522						
							1900	.0075	.7529						
							1905	.0196	.7540						
							1907	.1240	.7564						
							1908	.4055	.7608						
							1909	.3720	.7673						
							1918	.2270	.8119						
							1924	.1542	.8305						
							1930	.1134	.8439						
							1942	.0609	.8609						
							2000	.0259	.8734						
							2020	.0109	.8794						
							2040	.0037	.8818						
							2100	.0011	.8826						
							2115	.0000	.8827						

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 52.937. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 7 AND 8.
2/ RAINFALL FROM 0245 TO 0950.





FENNIMORE, WISCONSIN WATERSHED W-3

FENNIMORE, WISCONSIN WATERSHED W-4

LOCATION: Grant County, Wis.; 1 mile northeast of Fennimore; Blue River Branch, Wisconsin River Basin.

AREA: 171 acres

SLOPES:	Slope—Percent	0-2	2-6	6-10	10-15
	Percent of area	3	74	20	3

SOILS: (Revision) Thick to moderately thick silt mantle over bedrock or residual clays from limestone plus an accumulative silty material in natural drainageways.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Tama silt loam	70	10	Moderate, medium granular	Moderate	Moderate, medium subangular-blocky	Moderate	48	Moderate	Medium
Dubuque silt loam	24	8	Moderate, medium granular	Moderate	Moderate, medium subangular-blocky	Moderate	30	Moderate	Medium
Judson silt loam	6	24	Moderate, medium granular	Moderate	-----	-----	24	Moderate	Medium

EROSION:	Erosion class	+	2	3
	Percent of area	6	68	26

LAND CAPABILITY:	Class	II	III	IV	VI
	Percent of area	62	28	7	3

GEOLOGY: Calcitic cherty dolomites and sandy calcitic dolomites of the Galena formation of Middle Ordovician age outcrop in the watershed. The formation is overlain by several inches to 60+ inches of soil, loess, or clay-chert residuum, and underlain by the Ordovician Decorah formation. The watershed is on the southwest flank of the Wisconsin Arch, the rocks dipping 7 to 10 feet per mile to the south southwest. Source of data: R. N. Cheetham, Geologist, SCS.

SURFACE DRAINAGE: (Revision) Good; length of principal waterway approximately 2500 ft., a natural watershed with surface flow to two well defined waterways which join about 600 ft. above the station.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: (Revision) Runoff: 30 inch broad-crested V-notch concrete weir with 5 to 1 side slopes equipped with FW-1 recorder, with 6-hr. time scale. Precipitation: Four recording rain gages, three with 12-hr. and one with 192-hr. time scale.

WATERSHED CONDITIONS: Mixed cover area, over half in 3-yr. rotation of corn, small grain, hay.

GENERALLY REPRESENTS: (Revision) Cultivated uplands having good surface and internal drainage and moderate erosion in northwestern Illinois, northeastern Iowa, southeastern Minnesota and southwestern Wisconsin. Applicable to similar lands formerly in the Upper Mississippi Loess Hills problem area C10, but now designated as the Northern Mississippi Valley Loess Hills land resource area (M-105).

MONTHLY PRECIPITATION AND RUNOFF (inches)							FENNIMORE, WISCONSIN AREA - 171 ACRES							31.04		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P ₁	.40	.36	1.94 ^{2/}	1.68	1.13	1.76	3.09	1.97	1.83	.88	2.60	.42	18.06		
	Q	.00	.01	3.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.01		
STA AV ^{3/} P (38-63) Q		.89	.94	1.86	2.97	3.70	4.93	4.10	3.86	3.56	2.34	2.09	1.08	32.32		
		.18	.31	.80	.03	.03	.20	.18	.12	.03	.01	.00	.01	1.90		
MEAN P ^{4/} 73 YR		1.12	1.13	2.02	2.96	4.00	4.43	3.79	3.46	3.81	2.38	1.99	1.29	32.38		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VDLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-16	.11	3-16	.10	3-16	.19	3-16	.47	3-16	.87	3-16	1.33	3-15	1.70	3-13	2.95
MAXIMUMS FOR PERIOD OF RECORD																
19 38 TO 19 63	8-6 1951	1.76	8-6 1951	1.11	8-6 1951	1.48	7-15 1950	2.82	7-15 1950	2.86	7-15 1950	2.86	7-15 1950	2.86	7-15 1950	2.99

Notes: Quality of records: Monthly P and Q, excellent. Watershed conditions: 35.8%, corn; 16.1%, grain; 7.1%, hay; 22.1%, pasture; 11.5%, idle; 7.4%, roads and building sites. ^{1/} Precipitation is arithmetic average of 4 recording gages from Apr. 7 to Nov. 23 and R-1 rest of year. ^{2/} Snow water equivalent on Mar. 14 was 1.88 inches, had completely melted by Mar. 20. ^{3/} Precipitation records began June 1938. Runoff records began July 1938. ^{4/} Mean P based on 73-yr (1891-1963) U. S. Weather Bureau record period at Lancaster, Wis.

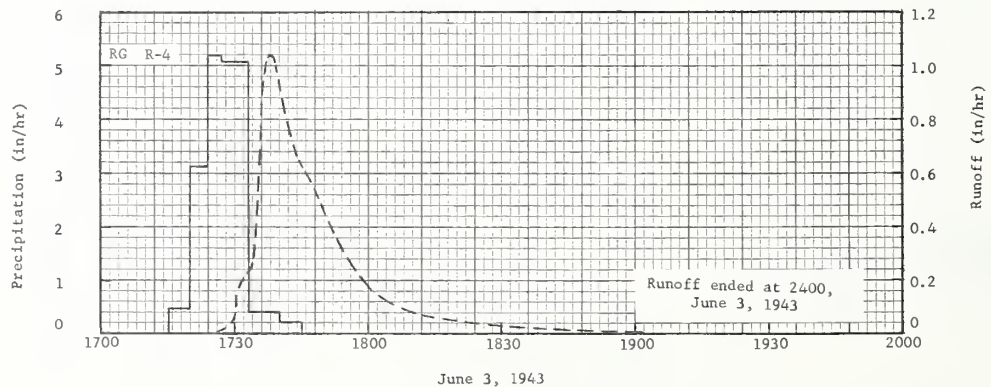
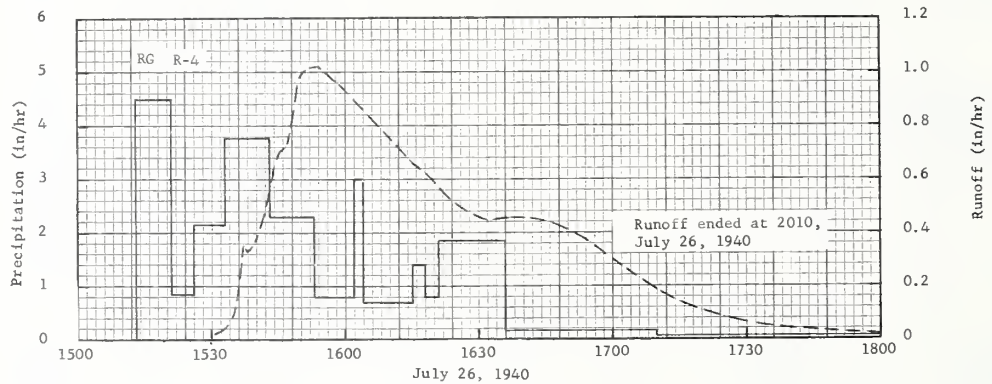
1963 SELECTED RUNOFF EVENTS			FENNIMORE, WISCONSIN				WATERSHED W-4			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of July 26, 1940										
	4 RG 1/			RG	R-4					
6-27	.16	.0000	7-26	1513	.00	.00	7-26	1457	.0000	.0000
6-28	.15	.0000		1521	4.50	.60		1459	.0059	.0001
7-10	1.98	.0039		1526	.84	.67		1510	.0015	.0006
7-11	.84	.0232		1533	2.14	.92		1520	.0069	.0012
7-25	.40	.0000		1543	3.78	1.55		1526	.0130	.0022
7-26	2/1.93	.0000		1553	2.28	1.93		1530	.0184	.0032
Watershed conditions: 25% corn, 6-8 ft.; 32% small grain - half cut; 19% hay - second crop, 6-10 in.; 18% pasture; 6% roads and farmstead.				1602	.80	2.05		1532	.0320	.0041
				1604	3.00	2.15		1534	.0567	.0056
				1615	.71	2.28		1535	.0915	.0068
				1618	1.40	2.35		1537	.3570	.0140
				1621	.80	2.39		1538	.3285	.0197
				1636	1.84	2.85		1540	.3780	.0314
				1710	.18	2.95		1542	.5010	.0459
				1800	.04	2.98		1544	.6500	.0652
				1830	.04	3.00		1545	.7000	.0764
				RG	R-1	3.18		1547	.7450	.1003
				RG	R-2	3.27		1549	.9300	.1278
				RG	R-3	3.05		1550	.9950	.1438
				4 RG	AVG 1/	3.12		1552	1.0160	.1772
								1554	1.0200	.2111
								1556	.9950	.2446
								1600	.9260	.3086
								1610	.7500	.4482
								1620	.5900	.5588
								1630	.4600	.6446
								1632	.4450	.6597
								1634	.4450	.6745
								1636	.4540	.6895
								1640	.4560	.7199
								1644	.4480	.7501
								1650	.4150	.7934
								1700	.2970	.8529
								1710	.1850	.8929
								1720	.1080	.9168
								1730	.0867	.9311
								1740	.0441	.9403
								1750	.0289	.9464
								1800	.0199	.9504
								1820	.0095	.9551
								1900	.0020	.9584
								2010	.0000	.9592
Event of June 3, 1943										
				RG	R-4					
5-5	.60	.0006	6-3	1715	.00	.00	6-3	1718	.0001	.0000
5-6	.08	.0000		1720	.48	.04		1724	.0027	.0001
5-9	.07	.0000		1724	3.15	.25		1728	.0229	.0010
5-15	1.38	.0008		1727	5.20	.51		1729	.0303	.0014
5-16	.02	.0000		1733	5.10	1.02		1730	.0783	.0023
5-23	.21	.0000		1740	.43	1.07		1731	.1760	.0044
5-24	.23	.0000		1745	.24	1.09		1733	.2155	.0112
5-29	.05	.0000						1734	.2610	.0152
5-30	.38	.0000						1735	.5065	.0216
5-31	.25	.0000						1736	.8700	.0331
6-1	.24	.0000		RG	R-1	1.02		1737	1.0160	.0488
6-2	2.15	.2285		RG	R-2	1.10		1738	1.0450	.0660
				RG	R-3	1.09		1739	1.0040	.0831
Watershed conditions: 35% corn just up; 12% small grain; 30% hay, 15 in.; 17% short pasture; 6% roads and buildings.				4 RG	AVG 1/	1.07		1740	.8870	.0989
								1743	.7010	.1388
								1748	.5250	.1899
								1754	.3180	.2317
								1758	.2050	.2489
								1803	.1352	.2628
								1809	.0905	.2739
Continued on next page										
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 172.425. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 31.1-5. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 4. 2/ RAINFALL FROM 0400 TO 1440.										

1963 SELECTED RUNOFF EVENTS			FENNIMORE, WISCONSIN				WATERSHED W-4			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of June 3, 1943—Continued										
							6-3	1815	.0650	.2816
								1825	.0394	.2900
								1840	.0204	.2972
								1900	.0094	.3019
								1930	.0034	.3048
								2000	.0014	.3059
								2030	.0006	.3064
								2100	.0003	.3066
								2400	.0001	.3079
Event of June 22, 1944										
5-23	4 RG 1/ .38	.0000	6-22	RG	R-3	.00	6-22	1945	.0002	.0000
5-24	.33	.0000		1938	.00	.09		1956	.0051	.0004
5-30	.07	.0000		1945	.77	.34		2004	.0288	.0024
5-31	.04	.0000		1949	3.60	.49		2006	.0427	.0034
6- 1	.89	.0000		1952	3.00	.94		2008	.1260	.0061
				1957	5.40					
6- 5	.21	.0000		2005	2.63	1.29		2014	.1252	.0192
6- 8	.35	.0000		2012	.86	1.39		2015	.4710	.0242
6- 9	.41	.0000						2016	.6150	.0333
6-11	.13	.0000						2017	.6780	.0441
6-12	1.75	.0318		RG	R-1	1.55		2018	.7090	.0557
				RG	R-2	1.44				
6-13	.47	.0044		RG	R-4	1.61		2020	.7140	.0795
6-15	.75	.0083						2021	.6960	.0912
6-17	1.32	.2962		4 RG	AVG 1/ 1.50			2024	.6440	.1247
6-22	.072/	.0000						2027	.5910	.1556
								2036	.3460	.2257
								2042	.2242	.2539
								2048	.1550	.2725
								2054	.1142	.2859
								2100	.0865	.2958
								2112	.0537	.3097
								2124	.0350	.3184
								2140	.0211	.3258
								2200	.0108	.3310
								2220	.0057	.3337
								2300	.0019	.3361
							6-23	2400	.0005	.3371
								0400	.0000	.3380
Event of June 21, 1954										
5-26	4 RG 1/ .15	.0000	6-21	RG	R-4	.00	6-21	1434	.0000	.0000
5-27	.72	.0000		1350	.00	.02		1441	.0059	.0007
5-28	1.56	.0000		1405	.08	.05		1445	.4476	.0173
5-30	.03	.0000		1409	.45	.06		1447	.4760	.0329
5-31	.33	.0000		1412	.20	.10		1450	.6260	.0609
				1415	.80					
6- 1	.58	.0000		1423	.15	.12		1455	.5400	.1098
6- 2	.66	.0000		1428	4.20	.47		1503	.4616	.1761
6- 3	1.46	.0000		1438	3.84	1.11		1509	.4408	.2210
6-15	.48	.0000		1440	.30	1.12		1515	.4030	.2632
6-16	.10	.0000		1445	3.84	1.44		1521	.3380	.3003
6-20	1.93	.0955		1457	.90	1.62		1533	.1774	.3510
6-21	.733/	.0356		1509	.30	1.68		1536	.1484	.3591
				1542	.02	1.69		1558	.0800	.3978
				1551	.40	1.75		1602	.0823	.4032
				1601	3.06	2.26		1606	.0957	.4091
				1606	1.20	2.36		1615	.3444	.4433
				1609	2.60	2.49		1622	.3816	.4856
				1625	.23	2.55		1631	.3460	.5402
				1628	1.80	2.64		1642	.2574	.5950
				1635	.69	2.72		1646	.2436	.6117
				1643	1.58	2.93		1650	.2602	.6285
				1648	.60	2.98		1657	.2918	.6610
				1847	.00	2.98		1700	.2812	.6753
				1850	7.00	3.33		1712	.1705	.7196
				1854	1.65	3.44		1720	.1240	.7389
Continued on next page										

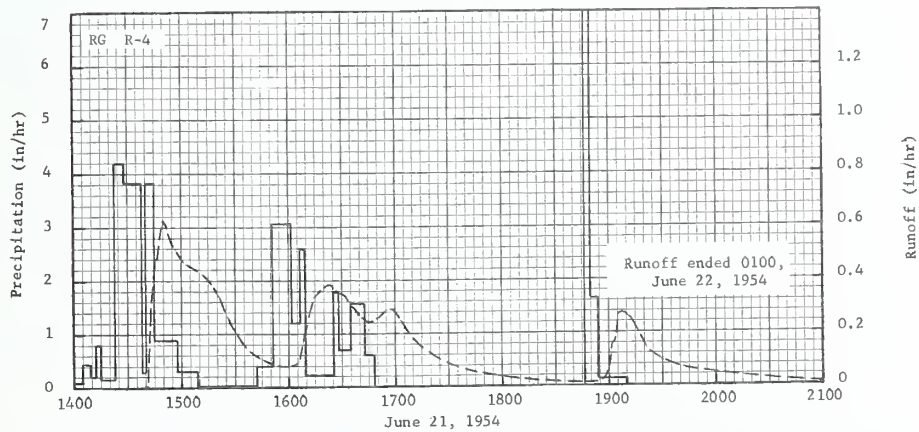
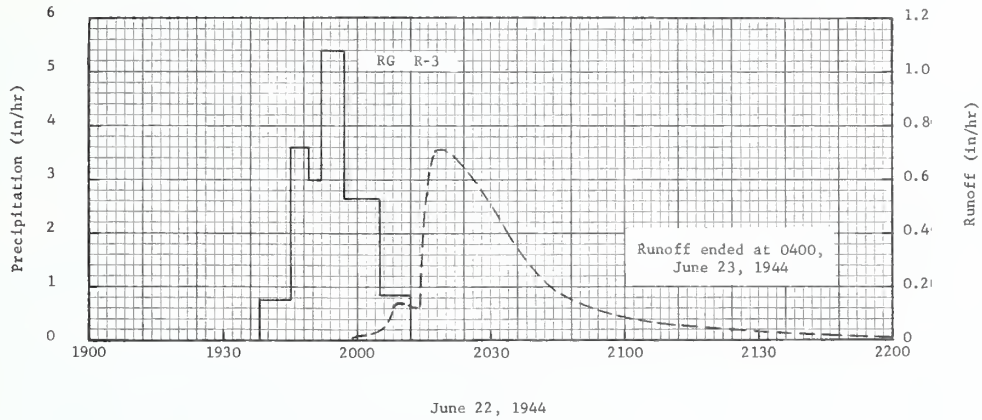
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 172.425. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 4.
2/ RAINFALL FROM 1220 TO 1230. 3/ RAINFALL FROM 0245 TO 1300.

1963 SELECTED RUNOFF EVENTS						FENNIMORE, WISCONSIN WATERSHED W-4			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF		
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
Event of June 21, 1954—Continued									
			6-21	1910	.11	3.47	6-21	1740	.7693
								1800	.7864
								1850	.8048
								1855	.8061
								1857	.8068
			4 RG	AVG 1/	3.34			1900	.8087
								1902	.8124
								1904	.8177
								1906	.8251
								1908	.8342
			6-22	0100				1910	.8433
								1921	.8823
								1930	.8996
								2000	.9332
								2100	.9607
								2200	.9666
								2300	.9680
								2400	.9683
								0100	.9684

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 172.425. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 4.



FENNIMORE, WISCONSIN WATERSHED W-4



FENNIMORE, WISCONSIN WATERSHED W-4

LA CROSSE, WISCONSIN WATERSHED CW

LOCATION: La Crosse County, Wis.; 3 miles east of La Crosse; La Crosse River, Mississippi River Basin.

AREA: 2.71 acres

SLOPES:	Slope—Percent	6-10	10-15	15-20	20-30
	Percent of area	15	24	27	34

SOILS: (Revision) Thick to moderately thick silt mantle over bedrock or residual clays from limestone.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Dubuque silt loam	61	8	Moderate medium granular	Moderate	Moderate, medium subangular blocky	Moderate	30	Moderate	Medium
Fayette silt loam	39	10	Moderate medium granular	Moderate	Moderate, medium subangular blocky	Moderate	48	Moderate	Medium

EROSION:	Class	2
	Percent of area	100

LAND CAPABILITY:	Class	III	IV	VI
	Percent of area	15	51	34

GEOLOGY: (Revision) The La Crosse Station is situated in the dissected uplands of the unglaciated or "Driftless" area. The bedrock consists of sandstones and dolomites of Upper Cambrian and Lower Ordovician age that dip very gently at about 20 feet per mile to southwest. The bedrock is overlain by a layer of eolian silt (loess) about 4-8 feet thick. The station is located on La Crosse Ridge which, like other high ridges in this area, is capped by a resistant formation, the Prairie du Chien Dolomite. Source of data: George F. Hanson, State Geologist.

SURFACE DRAINAGE: Mostly overland flow to south boundary where it is diverted by metal troughs to the gaging station.

CHARACTER OF FLOW: Ephemeral, continuous

INSTRUMENTATION: (Revision) Runoff: two foot trapezoidal flume equipped with FW-1 recorder, with 6-hr. time scale. Precipitation: Recording rain gage with 12-hr. time scale.

WATERSHED CONDITIONS: (Revision) Prior to 1937--generally in a 3-yr. rotation of corn, grain and hay; 1937-40--upper half strip cropped in 3-yr. rotation, lower half in hay; 1940-54--area divided into 6 strips and farmed on the contour in a 6-yr. rotation of corn, grain and 4-yrs. of hay; 1955-61 established a 3-yr. rotation of corn and 2-yrs. of hay, corn wheel track planted with interseeding of legumes; 1962-63 in 100 percent hay.

GENERALLY REPRESENTS: (Revision) Good conservation farming on rolling to steep uplands having medium internal drainage, good surface drainage and moderate erosion in northwestern Illinois, northeastern Iowa, southeastern Minnesota, and southwestern Wisconsin. Applicable to similar lands in the former Upper Mississippi Loess Hills problem area C10 but now designated as the Northern Mississippi Valley Loess Hills land resource area (M-105).

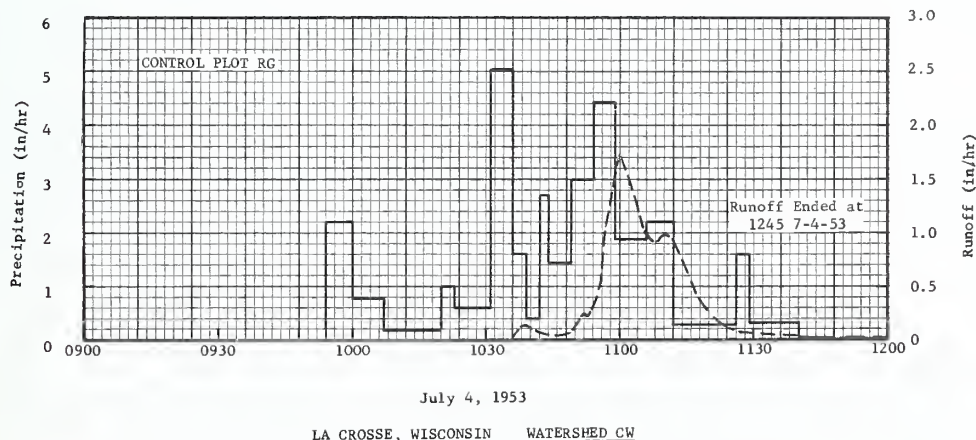
MONTHLY PRECIPITATION AND RUNOFF (inches)						LA CROSSE, WISCONSIN AREA — 2.71 ACRES						32.03				
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	.54 .00	.60 .00	2.37 .46	2.85 .00	2.24 .00	2.18 .00	5.61 T	5.06 .08	4.18 .00	2/ .00			25.63 .54		
STA AV3/ (37-63) Q	P Q	.92 .10	.99 .20	1.95 .73	2.85 .14	3.82 .08	4.28 .19	4.01 .28	3.99 .17	3.43 .13	2.14 .03	1.76 .01	.90 .01	31.04 2.07		
MEAN P 4/ 73 YR		1.15	1.16	1.86	2.89	3.93	4.34	3.62	3.46	3.90	2.30	1.96	1.25	31.82		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-2	.37	3-22	.06	3-22	.11	3-22	.23	3-22	.23	3-22	.28	3-22	.36	3-18	.46
MAXIMUMS FOR PERIOD OF RECORD																
1937 TO 1963	7-21 1938	4.50E	7-19 1952	1.77	7-19 1952	2.01	7-19 1952	2.08	7-19 1952	2.11	7-19 1952	2.12	7-19 1952	2.12	3-23 1961	2.25

Notes: Quality of records: Monthly P, good; monthly Q, Jan., Feb., Mar., poor, Apr.-Dec., good. Months of Jan., Feb., Mar. and Dec. include snow and snowmelt. Watershed conditions: 100% hay. 1/ Precipitation data obtained from control plot gage. 2/ Stations discontinued Sept. 30, 1963. 3/ Precipitation and runoff records began Jan. 1937. 4/ Mean P based on 73-yr. (1891-1963) U.S. Weather Bureau record period at Hillsboro, Wis.

1963			SELECTED RUNOFF EVENT			LA CROSSE, WISCONSIN			WATERSHED CW		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
			<u>Event of July 4, 1953</u>								
			CONTROL PLOT RG								
6- 4	CONTROL PLOT RG .37	.0000	7-4	0954	.00	.00	7-4	1036	.0000	.0000	
6- 5	.04	.0000		1000	2.20	.22		1037	.0824	.0007	
6- 7	.11	.0000		1007	.77	.31		1038	.1215	.0023	
6- 8	.59	.0000		1020	.18	.35		1040	.0944	.0060	
6-13	.59	.0000		1023	1.00	.40		1044	.0422	.0102	
6-17-18	.01	.0000		1031	.60	.48		1049	.0657	.0147	
6-19	.02	.0000		1036	5.04	.90		1052	.2467	.0226	
6-20	.06	.0000		1039	1.60	.98		1053	.2258	.0264	
6-23	.66	.0000		1042	.40	1.00		1055	.4377	.0377	
6-25	.82	.0000		1044	2.70	1.09		1056	.6185	.0462	
6-27	1.06	.0000		1049	1.44	1.21		1057	1.0614	.0596	
6-28	.03	.0000		1054	3.00	1.46		1059	1.5811	.1012	
				1059	4.44	1.83		1100	1.7129	.1275	
				1106	1.89	2.05		1102	1.5189	.1825	
				1112	2.20	2.27		1104	1.2224	.2291	
<u>Watershed conditions:</u> Six con-				1126	.26	2.33		1106	.9845	.2666	
tour strips each 45 feet wide.				1129	1.60	2.41		1108	.9077	.2987	
Alternate strips in hay and				1140	.33	2.47		1110	.9845	.3309	
grain. Lowest strip in hay.				1230	.04	2.50		1112	.9077	.3631	
								1118	.3671	.4277	
								1124	.1076	.4499	
								1127	.0605	.4541	
								1136	.0464	.4625	
								1145	.0153	.4669	
								1200	.0010	.4686	
								1245	.0000	.4688	

Watershed conditions: Six contour strips each 45 feet wide. Alternate strips in hay and grain. Lowest strip in hay.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.732. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 32.3-6.



LA CROSSE, WISCONSIN WATERSHED CWA

LOCATION: La Crosse County, Wis.; 3 miles east of La Crosse; La Crosse River, Mississippi River Basin.

AREA: 2.95 acres

SLOPES:	Slope--Percent	2-6	6-10	10-15	15-20
	Percent of area	7	29	38	26

SOILS: (Revision) Thick to moderately thick silt mantle over bedrock or residual clays from limestone.

Type	Percent of area	Topsoil		Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability
Fayette silt loam	72	10	Moderate medium granular	Moderate	Moderate, medium subangular blocky	Moderate	48	Moderate
Dubuque silt loam	28	8	Moderate medium granular	Moderate	Moderate, medium subangular blocky	Moderate	30	Moderate

EROSION:	Class	2
	Percent of area	100

LAND CAPABILITY:	Class	III	IV
	Percent of area	36	64

GEOLOGY: (Revision) The La Crosse Station is situated in the dissected uplands of the unglaciated or "Driftless" area. The bedrock consists of sandstones and dolomites of Upper Cambrian and Lower Ordovician age that dip very gently at about 20 feet per mile to southwest. The bedrock is overlain by a layer of eolian silt (loess) about 4-8 feet thick. The station is located on La Crosse Ridge which, like other high ridges in this area, is capped by a resistant formation, the Prairie du Chien Dolomite. Source of data: George F. Hanson, State Geologist.

SURFACE DRAINAGE: Good; length of principal waterway 550 ft., mostly overland flow to the west boundary where it is diverted by a dike to the gaging station.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: (Revision) Runoff: two foot trapezoidal flume equipped with FW-1 recorder, with 6-hr. time scale. Precipitation: Recording rain gage with 12-hr. time scale.

WATERSHED CONDITIONS: (Revision) 1933-37--part of this watershed was farmed in a 3-yr. rotation of corn, grain, hay; 1938-46--continuous hay on the lower third and 6-yr. rotation of corn, grain, and 4 yrs. of hay on the upper two-thirds; 1947-51--permanent hay; 1952--established as a strip-cropped area with 6 strips 50-ft. wide with a 2 percent grade toward the outlet channel, 6-yr. rotation of corn, grain, and 4-yrs. hay; 1955-61 changed to 3-yr. rotation of corn and 2-yrs. of hay, corn wheel track planted with interseeding of legumes; 1962-1963 in 100 percent hay.

GENERAL REPRESENTS: (Revision) Good conservation farming on rolling to steep uplands having medium internal drainage, good surface drainage and moderate erosion in northwestern Illinois, northeastern Iowa, southeastern Minnesota, and southwestern Wisconsin. Applicable to similar lands in the former Upper Mississippi Loess Hills problem area C10 but now designated as the Northern Mississippi Valley Loess Hills land resource area (M-105).

MONTHLY PRECIPITATION AND RUNOFF (inches)						LA CROSSE, WISCONSIN WATERSHED CWA						32.04		
						AREA - 2.95 ACRES								
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	P1/ Q	.54 .00	.60 .00	2.37 .68	2.85 .00	2.24 .00	2.18 .00	5.61 .00	5.06 .04	4.18 .00	2/			25.63 .72
	STA AV ³ / _P (52-63) Q	.60 .01	.87 .00	1.67 .58	2.61 .33	3.71 .00	3.97 .20	4.78 .46	4.21 .17	3.22 .03	1.99 .01	1.76 .00	.74 .00	30.13 1.79
	MEAN P 4/ 73 YR	1.15	1.16	1.86	2.89	3.93	4.34	3.62	3.46	3.90	2.30	1.96	1.25	31.82

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-2	.11	3-22	.05	3-23	.10	3-22	.20	3-22	.24	3-22	.24	3-22	.47	3-18	.58

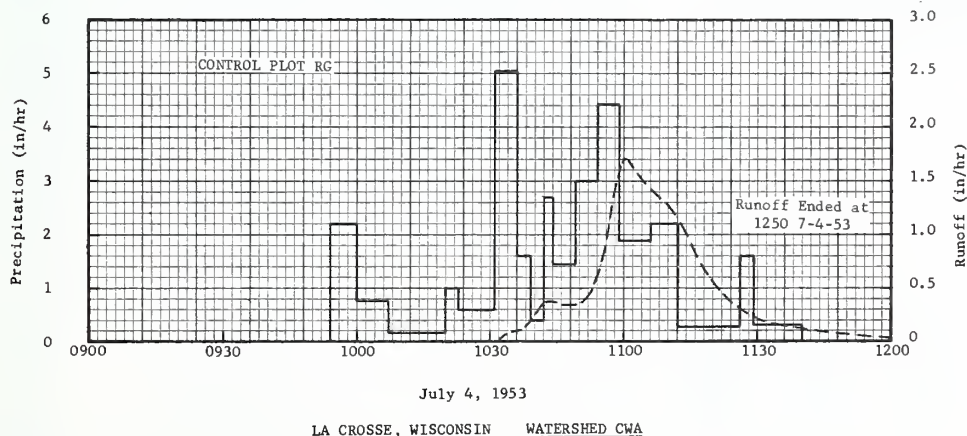
MAXIMUMS FOR PERIOD OF RECORD																
1952 TO 1963	7-19 1952	3.40	7-19 1952	1.73	7-19 1952	1.98	7-19 1952	2.06	7-19 1952	2.14	7-19 1952	2.16	7-19 1952	2.16	7-19 1952	2.16

Notes: Quality of records: Monthly P, good; Monthly Q, Jan., Feb., Mar., poor, Apr.-Dec., good. Months of Jan., Feb., Mar. and Dec. include snow and snowmelt. Watershed conditions: 100% hay. 1/ Precipitation data obtained from control plot gage. 2/ Stations discontinued Sept. 30, 1963. 3/ Precipitation and runoff records began Jan. 1952. 4/ Mean P based on 73-yr. (1891-1963) U.S. Weather Bureau record period at Hillsboro, Wis.

1963 SELECTED RUNOFF EVENT			LA CROSSE, WISCONSIN				WATERSHED CWA			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
CONTROL PLOT RG			Event of July 4, 1953							
6- 4	.37	.0000	7-4	0954	.00	.00	7-4	1032	.0000	.0000
6- 5	.04	.0000		1000	2.20	.22		1033	.0468	.0004
6- 7	.11	.0000		1007	.77	.31		1038	.1401	.0083
6- 8	.59	.0000		1020	.18	.35		1042	.3622	.0256
6-13	.59	.0000		1023	1.00	.40		1044	.3753	.0381
6-17-18	.01	.0000		1031	.60	.48		1049	.3494	.0686
6-19	.02	.0000		1036	5.04	.90		1051	.3753	.0809
6-20	.06	.0000		1039	1.60	.98		1053	.4734	.0953
6-23	.66	.0000		1042	.40	1.00		1055	.7090	.1154
6-25	.82	.0000		1044	2.70	1.09		1059	1.5725	.1941
6-27	1.06	.0000		1049	1.44	1.21		1100	1.7002	.2203
6-28	.03	.0000		1054	3.00	1.46		1101	1.7002	.2475
				1059	4.44	1.83		1104	1.5120	.3278
				1106	1.89	2.05		1110	1.2802	.4673
				1112	2.20	2.27		1115	.9274	.5600
				1126	.26	2.33		1121	.5195	.6298
				1129	1.60	2.41		1124	.3753	.6521
				1140	.33	2.47		1130	.2265	.6823
				1230	.04	2.50		1136	.1556	.7008
								1145	.0927	.7193
								1200	.0249	.7326
								1210	.0097	.7352
								1250	.0000	.7366

Watershed conditions: Six strips on 2% grade. Lowest strip in hay, then alternate strips in grain and hay.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.975. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 32.3-6.



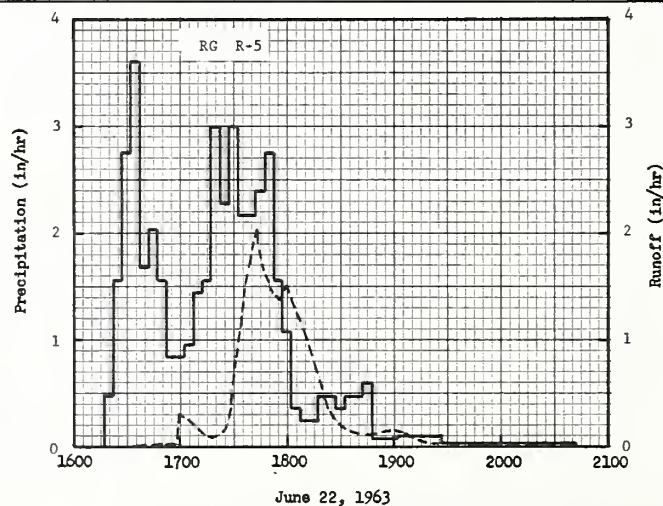
MONTHLY PRECIPITATION AND RUNOFF (inches)						CHEROKEE, OKLAHOMA AREA - 1.68 ACRES							WATERSHED W-10 34.10			
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.35 .00	.08 .00	1.30 .00	2.13 .02	2.09 .01	8.77 2.45	5.01 1.13	1.63 .02	3.95 1.78	.73 .00	1.34 .00	.14 .00	27.52 5.41			
STA AV2/P (60-63) Q	.25 .00	.14 .00	1.91 .17	1.93 .04	3.04 .66	6.44 1.45	3.74 .45	1.82 .01	3.16 .68	1.79 .06	1.20 .02	.78 .01	26.20 3.55			
MEAN P 3/ 42 YR	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-4	2.95	6-22	1.16	6-22	1.32	6-22	1.37	6-22	1.37	6-22	2.42	6-22	2.42	6-22	2.42
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1963	9-14 1962	3.77	6-22 1963	1.16	6-22 1963	1.32	6-22 1963	1.37	6-22 1963	1.37	6-22 1963	2.42	6-22 1963	2.42	6-22 1963	2.42
Notes: Watershed conditions: Continuous wheat annually, tillage during fallow period with chisel type field cultivator (Hoeme) to 6-inch depth with cross chiseling if necessary to obtain good tillage, final tillage before seeding wheat with a rod weeder. 1/Precipitation data obtained from a standard gage at rain gage 5 location. 2/Precipitation and runoff records began August 1960. 3/Mean P based on 49-yr (1915-63) U.S. Weather Bureau record period at Cherokee, Okla., with 20 missing months between 1943-59 estimated, but 7 missing months in 1919, 20, 40, and 41 unestimated.																
1963 SELECTED RUNOFF EVENTS						CHEROKEE, OKLAHOMA							WATERSHED W-10 34.10			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 22, 1963																
	RG R-5		6-22	RG	R-5		6-22									
5-29	.10	.00		1617	.00	.00		1632	.0000	.00						
5-31	1.10	.01		1622	.48	.04		1634	.0012	.00						
6-1	.12	.00		1627	1.56	.17		1640	.0043	.00						
6-2	.16	.00		1632	2.76	.40		1644	.0110	.00						
6-3	.80	.04		1637	3.60	.70		1648	.0204	.00						
6-8	.47	.00		1642	1.68	.84		1651	.0138	.00						
6-14	.03	.00		1647	2.04	1.01		1658	.0240	.00						
6-16	1.30	.00		1652	1.56	1.14		1659	.298	.01						
6-17	.08	.00		1702	.84	1.28		1702	.285	.02						
				1707	.96	1.36		1704	.260	.03						
				1712	1.44	1.48		1706	.226	.04						
				1717	1.56	1.61		1708	.184	.05						
				1722	3.00	1.86		1714	.106	.06						
				1727	2.28	2.05		1718	.0787	.07						
Watershed conditions: 100% of area had been in wheat. After harvest the area was tilled with a Hoeme chisel to a depth of 4" on June 14, 1963.							1732	3.00	2.30	.07						
				1742	2.16	2.66		1726	.194	.08						
				1747	2.40	2.86		1727	.260	.08						
				1752	2.76	3.09		1728	.395	.09						
				1757	1.56	3.22		1729	.524	.10						
				1802	1.08	3.31		1730	.760	.11						
				1807	.36	3.34		1732	.946	.14						
				1817	.24	3.38		1734	1.18	.17						
				1827	.48	3.46		1736	1.51	.22						
				1832	.36	3.49		1738	1.68	.27						
				1842	.48	3.57		1740	1.85	.33						
				1847	.60	3.62		1743	2.04	.43						
				1902	.08	3.64		1744	1.85	.46						
				1927	.10	3.68		1746	1.68	.52						
				2042	.02	3.70		1750	1.51	.62						
								1752	1.45	.67						
								1756	1.39	.77						
								1800	1.51	.86						
								1804	1.30	.96						
								1808	1.15	1.04						
								1810	1.05	1.08						
								1813	.873	1.12						
								1818	.636	1.19						
								1822	.410	1.22						
								1824	.324	1.24						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6940. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.10-4.																

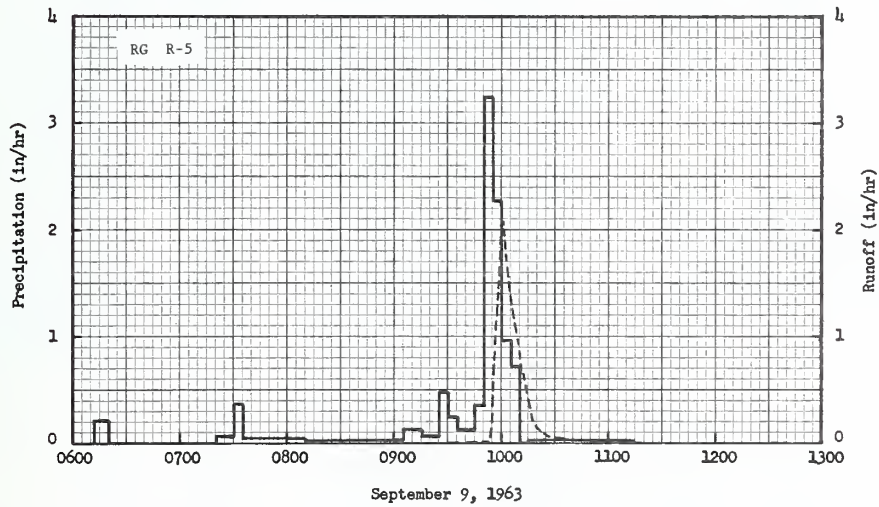
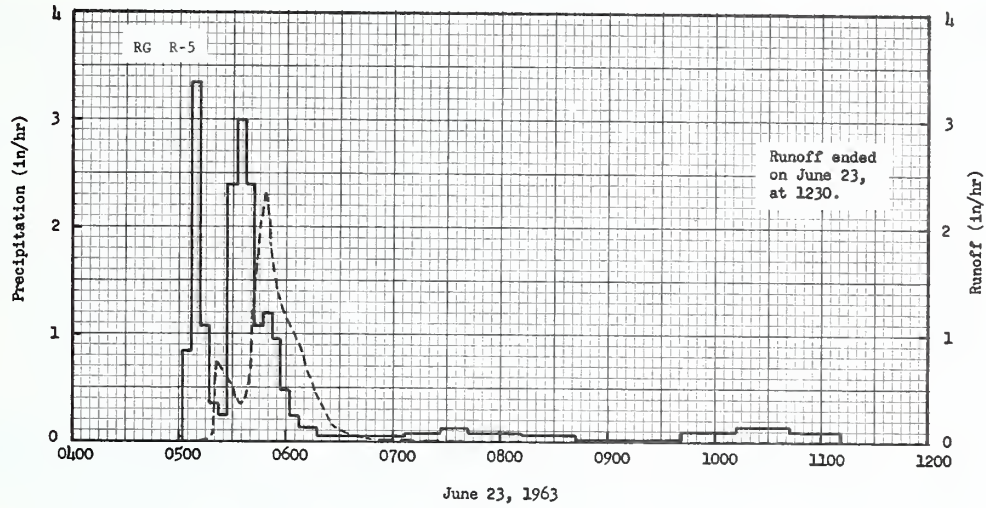
1963 SELECTED RUNOFF EVENTS			CHEROKEE, OKLAHOMA				WATERSHED W-10 34.10			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
<u>Event of June 22, 1963 - Continued</u>										
							6-22	1828	.237	1.25
								1832	.184	1.27
								1836	.138	1.28
								1840	.122	1.29
								1850	.114	1.31
								1853	.138	1.31
								1858	.174	1.33
								1902	.156	1.34
								1908	.0990	1.35
								1914	.0501	1.36
								1922	.0138	1.36
								1926	.0204	1.36
								1930	.0204	1.36
								1940	.0138	1.37
								1946	.0084	1.37
								2050	.0000	1.37
<u>Event of June 23, 1963</u>										
	RG R-5		6-23	RG	R-5		6-23			
5-29	.10	.00		0502	.00	0.00		0512	.0000	.00
5-31	1.10	.01		0507	.84	.07		0515	.0084	.00
6-1	.12	.00		0512	3.36	.35		0518	.0318	.00
6-2	.16	.00		0517	1.08	.44		0519	.0787	.00
6-3	.80	.04		0522	.36	.47		0520	.524	.01
6-8	.47	.00		0527	.24	.49		0521	.676	.02
6-14	.03	.00		0532	2.40	.69		0522	.738	.03
6-16	1.30	.00		0537	3.00	.94		0523	.696	.04
6-17	.08	.00		0542	2.40	1.14		0527	.597	.08
6-22	3.80	1.37		0547	1.08	1.23		0530	.507	.11
6-23	1/.16	1/.00		0552	1.20	1.33		0532	.410	.13
				0557	.96	1.41		0535	.337	.15
				0602	.48	1.45		0537	.395	.16
				0607	.24	1.47		0538	.524	.17
				0617	.12	1.49		0540	.717	.19
				0707	.06	1.54		0541	.946	.20
				0727	.09	1.57		0542	1.27	.22
				0742	.12	1.60		0543	1.51	.24
				0812	.08	1.64		0544	1.71	.27
				0842	.06	1.67		0545	1.93	.30
				0942	.02	1.69		0546	2.08	.33
				1012	.10	1.74		0548	2.32	.41
				1042	.14	1.81		0550	2.08	.48
				1112	.10	1.86		0551	1.89	.51
								0552	1.71	.54
								0554	1.51	.60
								0556	1.33	.64
								0558	1.21	.69
								0600	1.13	.72
								0604	.996	.79
								0608	.850	.86
								0610	.760	.88
								0612	.655	.91
								0614	.560	.93
								0616	.473	.94
								0618	.395	.96
								0620	.324	.97
								0624	.215	.99
								0626	.174	1.00
								0628	.138	1.00
								0630	.114	1.00
								0638	.0553	1.02
								0649	.0278	1.02
								0708	.0138	1.03
Continued on next page										

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6940 . 1/ PRIOR TO 0502.

1963			SELECTED RUNOFF EVENTS				CHEROKEE, OKLAHOMA		WATERSHED W-10		34.10	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
			<u>Event of June 23, 1963 - Continued</u>									
							6-23	0726	.0084	1.03		
								0810	.0027	1.04		
								0920	.0012	1.04		
								1030	.0012	1.04		
								1058	.0138	1.04		
								1140	.0012	1.05		
								1230	.0000	1.05		
			<u>Event of September 9, 1963</u>									
	RG R-5		9-9	RG	R-5		9-9					
8-17	.35	.00		0612	.00	.00		0929	.0000	.00		
8-18	1.12	.02		0620	.22	.03		0953	.0043	.00		
8-28	.16	.00		0720	.00	.03		0954	.106	.00		
9 -1	.11	.00		0730	.06	.04		0955	.425	.01		
9 -3	.12	.00		0735	.36	.07		0956	.717	.02		
9 -4	2.63	1.34		0810	.03	.09		0957	1.10	.03		
				0905	.01	.10		0958	1.51	.05		
				0915	.12	.12		0959	1.85	.08		
				0925	.06	.13		1001	2.08	.15		
				0930	.48	.17		1002	1.85	.18		
				0935	.24	.19		1004	1.51	.23		
				0945	.12	.21		1006	1.21	.28		
				0950	.36	.24		1008	.996	.32		
				0955	3.24	.51		1010	.897	.35		
				1000	2.28	.70		1012	.655	.37		
				1005	.96	.78		1014	.457	.39		
				1010	.72	.84		1016	.298	.41		
				1015	.00	.84		1018	.194	.41		
				1115	.02	.85		1020	.138	.42		
								1022	.106	.42		
								1025	.0787	.43		
								1032	.0452	.43		
								1041	.0278	.44		
								1050	.0138	.44		
								1110	.0043	.45		
								1138	.0012	.45		
								1240	.0000	.45		
Watershed conditions: 100% of area cultivated. Soil surface firm and slightly crusted with very little residue.												

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6940 .

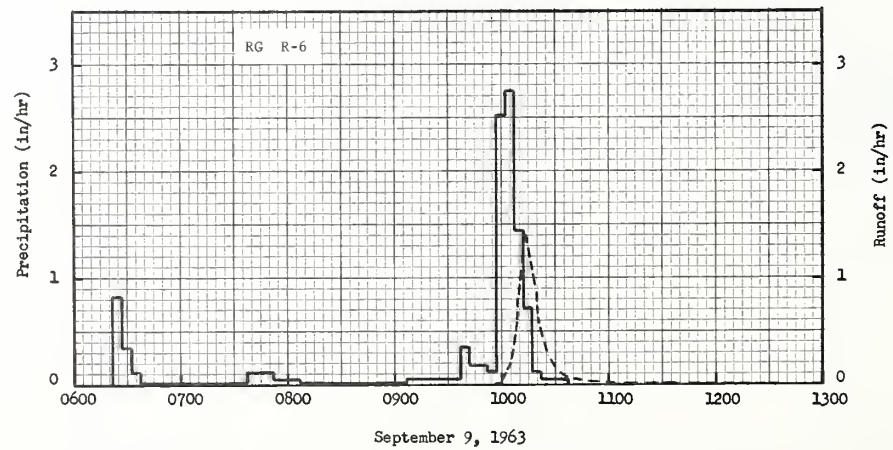
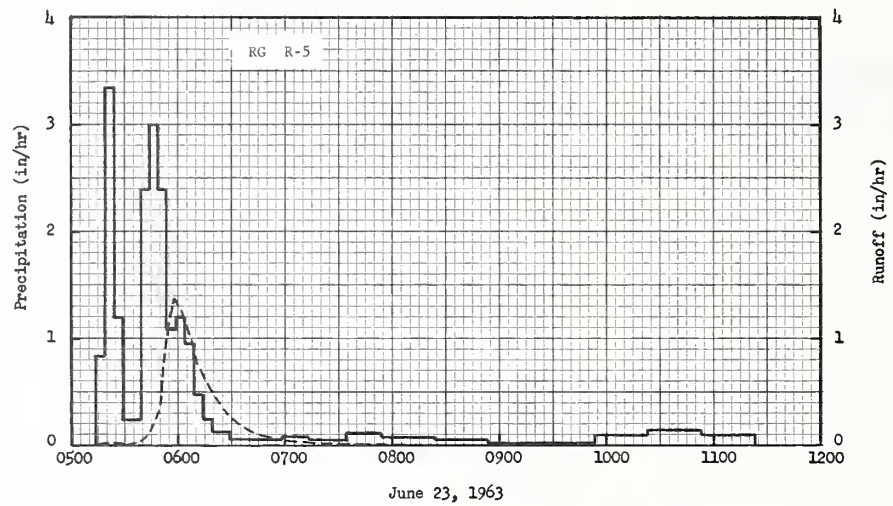
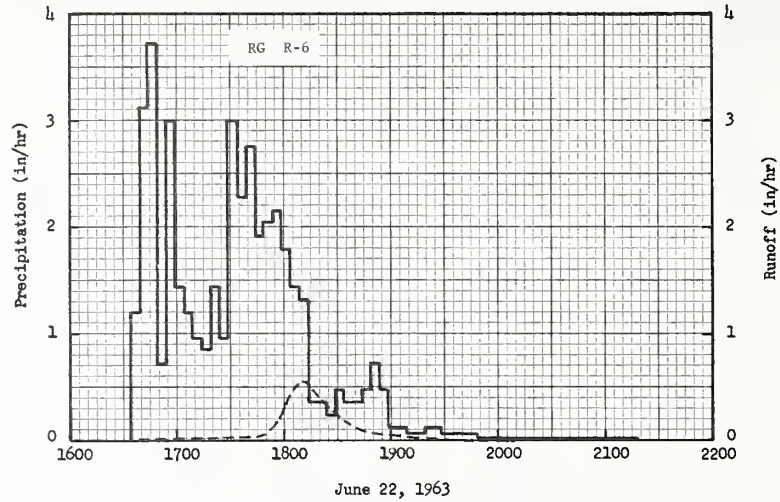




CHEROKEE, OKLAHOMA WATERSHED W-10

1963			SELECTED RUNOFF EVENTS				CHEROKEE, OKLAHOMA				WATERSHED W-11				34.11			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF											
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of June 23, 1963																		
	RG R-6		6-23	RG	R-5		6-23											
5-29	.10	.00		0513	.00	.00		0514	.0000	.00								
5-31	1.08	.00		0518	.84	.07		0517	.0158	.00								
6-1	.12	.00		0523	3.36	.35		0518	.0270	.00								
6-2	.16	.00		0528	1.20	.45		0522	.0231	.00								
6-3	.82	T		0538	.24	.49		0524	.0158	.00								
6-8	.48	.00		0543	2.40	.69		0531	.0097	.00								
6-14	.03	.00		0548	3.00	.94		0537	.0231	.01								
6-16	1.32	.00		0553	2.40	1.14		0540	.0498	.01								
6-17	.08	.00		0558	1.08	1.23		0544	.106	.01								
6-22	3.66	.31		0603	1.20	1.33		0547	.243	.02								
	RG R-5			0608	.96	1.41		0549	.454	.03								
6-23	1/.18	1/.00		0613	.48	1.45		0552	.698	.06								
				0618	.24	1.47		0553	.906	.08								
				0628	.12	1.49		0555	1.09	.11								
				0658	.06	1.52		0556	1.20	.13								
				0713	.08	1.54		0558	1.36	.17								
				0733	.06	1.56		0602	1.28	.26								
				0753	.12	1.60		0604	1.17	.30								
				0823	.08	1.64		0606	1.07	.34								
				0853	.06	1.67		0608	.906	.37								
				0953	.02	1.69		0612	.737	.42								
				1023	.10	1.74		0614	.641	.45								
				1053	.14	1.81		0618	.535	.49								
				1123	.10	1.86		0624	.395	.53								
								0630	.254	.56								
								0640	.137	.60								
								0648	.0851	.61								
								0700	.0498	.62								
								0710	.0270	.63								
								0730	.0158	.64								
								0738	.0097	.64								
								0814	.0014	.64								
								0924	.0000	.64								
Event of September 9, 1963																		
	RG R-6		9-9	RG	R-6		9-9											
8-17	.38	.00		0622	.00	.00		0956	.0000	.00								
8-18	1.21	T		0627	.84	.07		1000	.0158	.00								
8-28	.14	.00		0632	.36	.10		1002	.113	.00								
9-1	.12	.00		0637	.12	.11		1004	.181	.01								
9-3	.13	.00		0737	.01	.12		1005	.243	.01								
9-4	2.44	.81		0752	.12	.15		1007	.454	.02								
				0807	.04	.16		1008	.622	.03								
				0907	.01	.17		1009	.778	.04								
				0937	.04	.19		1010	.998	.06								
				0942	.36	.22		1011	1.14	.08								
				0952	.18	.25		1012	1.25	.10								
				0957	.12	.26		1013	1.39	.12								
				1002	2.52	.47		1014	1.30	.14								
				1007	2.76	.70		1016	1.14	.18								
				1012	1.44	.82		1017	1.02	.20								
				1017	.72	.88		1018	.906	.21								
				1022	.12	.89		1020	.641	.24								
				1037	.04	.90		1023	.424	.27								
								1026	.266	.28								
								1030	.145	.30								
								1036	.0725	.31								
								1044	.0354	.31								
								1100	.0158	.32								
								1120	.0050	.32								
								1234	.0000	.33								
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1377 . 1/ PRIOR TO 0513.																		

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1377 . 1/ PRIOR TO 0513.



CHEROKEE, OKLAHOMA WATERSHED W-11

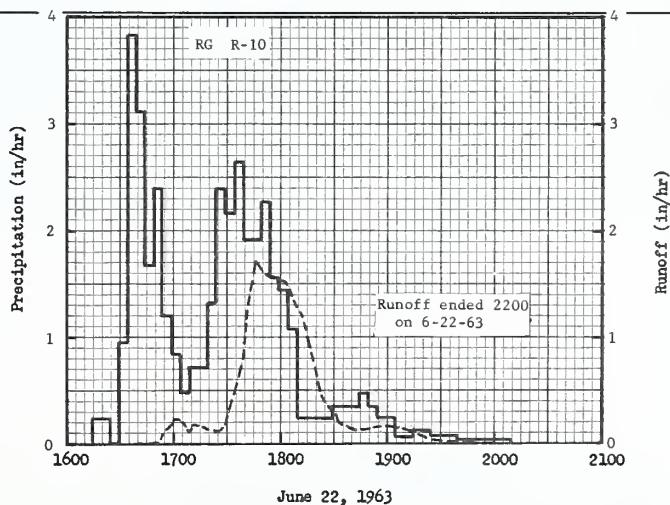
MONTHLY PRECIPITATION AND RUNOFF (inches)						CHEROKEE, OKLAHOMA WATERSHED W-12 AREA—1.68 ACRES								34.12		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
STA AV P ¹ / _{(60-62) Q}	.24 .00	.21 .00	2.13 .17	1.77 .04	3.49 .88	5.24 1.02	3.96 .44	1.84 .00	2.86 .15	2.17 .02	1.13 .01	.96 T	26.00 2.73			
1963 P ² / _O	.38 .00	.08 .00	1.32 .00	2.11 .01	1.93 .00	8.45 2.43	4.32 .98	1.76 T	3.86 1.17	.65 .00	1.33 .00	.13 .00	26.32 4.59			
STA AV ³ / _{(60-63) Q}	.29 .00	.16 .00	1.86 .11	1.88 .03	2.97 .58	6.31 1.49	4.05 .57	1.82 .00	3.11 .40	1.79 .02	1.18 T	.75 T	26.17 3.20			
NORMAL P	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-23	2.50	6-22	1.08	6-22	1.25	6-22	1.32	6-22	1.32	6-22	2.40	6-22	2.40	6-22	2.40
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1963	6-2 1961	2.96	6-2 1961	1.28	6-2 1961	1.29	6-22 1963	1.32	6-22 1963	1.32	6-22 1963	2.40	6-22 1963	2.40	6-22 1963	2.40
Notes: Watershed Conditions: Continuous wheat annually, first tillage during fallow period with one-way disc harrow shallow (2 in. to 2½ in.), succeeding tillages with chisel type field cultivator (Hoeme) to maximum depth of 6 inches and final tillage before seeding wheat with same tool with sweeps on shanks. ¹ / Station averages for Jan. 1962 P and Annual published in Ref. 6 have been revised and new values <u>underlined</u> . ² / Precipitation data obtained from a standard gage at rain gage 10 location. ³ / Precipitation and runoff records began July 1960. ⁴ / Mean P based on 49-yr (1915-63) U.S. Weather Bureau record period at Cherokee, Okla., with 20 missing months between 1943-59 estimated, but 7 missing months in 1919, 20, 40, and 41 unestimated.																
1963 SELECTED RUNOFF EVENTS						CHEROKEE, OKLAHOMA WATERSHED W-12								34.12		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-OAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-OAY	TIME OF OAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-OAY	TIME OF OAY	RATE (in/hr)	ACC. (inches)						
	RG R-10		6-22	RC	R-10		6-22									
5-29	.08	.00		1614	.00	.00		1638	.0000	.00						
5-31	.99	.00		1624	.24	.04		1652	.0062	.00						
6-1	.12	.00		1629	.00	.04		1654	.0923	.00						
6-2	.15	.00		1634	.96	.12		1658	.185	.01						
6-3	.89	.03		1639	3.84	.44		1702	.227	.03						
6-8	.47	.00		1644	3.12	.70		1706	.195	.04						
6-14	.03	.00		1649	1.68	.84		1708	.166	.05						
6-16	1.27	.00		1654	2.40	1.04		1712	.195	.06						
6-17	.08	.00		1659	1.20	1.14		1724	.122	.09						
				1704	.84	1.21		1728	.156	.10						
				1709	.48	1.25		1730	.238	.10						
				1719	.72	1.37		1734	.492	.13						
				1724	1.32	1.48		1738	.763	.17						
				1729	2.40	1.68		1740	1.10	.20						
				1734	2.16	1.86		1742	1.33	.24						
				1739	2.64	2.08		1744	1.52	.29						
				1749	1.92	2.40		1746	1.72	.34						
				1754	2.28	2.59		1750	1.62	.45						
				1759	1.56	2.72		1754	1.55	.56						
				1804	1.44	2.84		1803	1.52	.79						
				1809	1.08	2.93		1806	1.39	.86						
				1829	.24	3.01		1808	1.30	.91						
				1844	.36	3.10		1811	1.22	.97						
				1849	.48	3.14		1813	1.10	1.01						
				1854	.36	3.17		1816	.925	1.06						
				1904	.24	3.21		1818	.785	1.09						
				1914	.06	3.22		1820	.658	1.11						
				1924	.12	3.24		1822	.526	1.13						
				1939	.08	3.26		1824	.443	1.15						
				2009	.04	3.28		1826	.381	1.16						
								1830	.274	1.18						
								1832	.238	1.19						
								1834	.185	1.20						
								1841	.156	1.22						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6940. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.12-5.																

1963			SELECTED RUNOFF EVENTS				CHEROKEE, OKLAHOMA		WATERSHED W-12		34.12
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
<u>Event of June 22, 1963 - Continued</u>											
							6-22	1850	.139	1.24	
								1855	.156	1.25	
								1901	.175	1.27	
								1907	.166	1.29	
								1910	.139	1.29	
								1914	.107	1.30	
								1918	.0790	1.31	
								1922	.0406	1.31	
								1934	.0205	1.32	
								1940	.0139	1.32	
								2000	.0043	1.32	
								2040	.0012	1.32	
								2200	.0000	1.32	
<u>Event of June 23, 1963</u>											
	RG R-10		6-23	RG	R-10		6-23				
5-29	.08	.00		0511	.00	.00		0514	.0000	.00	
5-31	.99	.00		0514	.60	.03		0516	.0012	.00	
6 -1	.12	.00		0519	2.88	.27		0519	.0139	.00	
6 -2	.15	.00		0524	1.68	.41		0520	.0362	.00	
6 -3	.89	.03		0529	.36	.44		0522	.0923	.00	
6 -8	.47	.00		0534	.24	.46		0523	.175	.00	
6-14	.03	.00		0539	1.68	.60		0524	.312	.01	
6-16	1.27	.00		0544	3.00	.85		0526	.396	.02	
6-17	.08	.00		0549	3.60	1.15		0528	.492	.04	
6-22	3.38	1.32		0559	1.20	1.35		0530	.544	.05	
6-23	1/.16	1/.00		0604	1.08	1.44		0533	.492	.08	
				0609	.60	1.49		0536	.443	.10	
				0614	.24	1.51		0539	.381	.12	
				0624	.12	1.53		0542	.526	.14	
				0639	.08	1.55		0544	.638	.16	
				0709	.04	1.57		0545	.763	.18	
				0739	.08	1.61		0546	.950	.19	
				0754	.12	1.64		0547	1.52	.21	
				0824	.08	1.68		0548	1.65	.24	
				0854	.06	1.71		0549	1.86	.27	
				0924	.02	1.72		0550	2.25	.30	
				0954	.04	1.74		0551	2.42	.34	
				1054	.10	1.84		0553	2.50	.42	
				1124	.04	1.86		0555	2.33	.50	
								0557	2.01	.57	
								0558	1.82	.61	
								0559	1.52	.63	
								0602	1.33	.71	
								0604	1.19	.75	
								0606	1.05	.78	
								0610	.901	.85	
								0613	.720	.89	
								0616	.599	.92	
								0620	.475	.96	
								0622	.381	.97	
								0626	.274	1.00	
								0630	.216	1.01	
								0634	.147	1.02	
								0638	.107	1.03	
								0642	.0790	1.04	
								0648	.0556	1.04	
								0654	.0362	1.05	
								0700	.0241	1.05	
								0710	.0139	1.06	
								0720	.0085	1.06	
								0800	.0043	1.06	
								0824	.0043	1.06	
								0840	.0062	1.06	
								0858	.0043	1.07	
Continued on next page											
NOTES: TO CONVERT RUNOFF IN/HR TO CFS, MULTIPLY BY 1.6940. 1/ PRIOR TO 0511.											

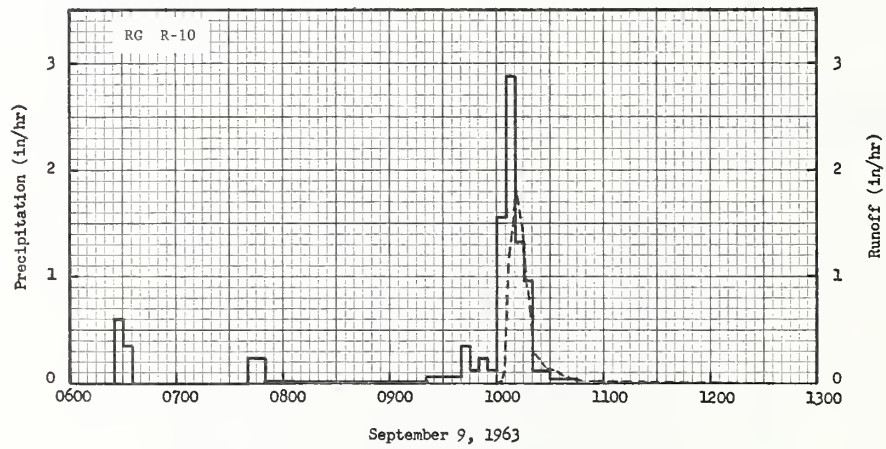
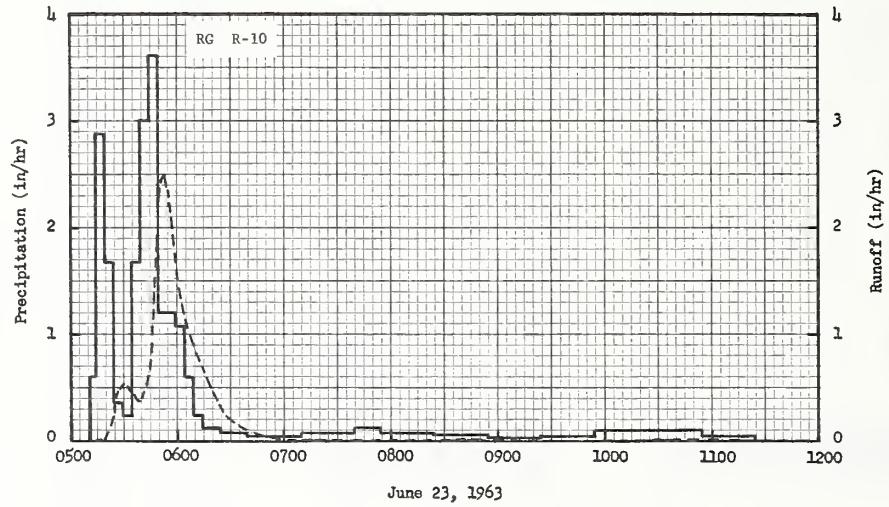
1963 SELECTED RUNOFF EVENTS			CHEROKEE, OKLAHOMA				WATERSHED W- 12 34.12			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
<u>Event of June 23, 1963 - Continued</u>										
							6-23	0920	.0012	1.07
								1000	.0000	1.07
								1030	.0012	1.07
								1040	.0027	1.07
								1050	.0043	1.07
								1056	.0085	1.07
								1106	.0085	1.07
								1120	.0043	1.07
								1138	.0012	1.07
								1154	.0000	1.07
<u>Event of September 9, 1963</u>										
RG R-10			9-9	RG	R-10		9-9			
8-17	.48	.00		0625	.00	.00		1000	.0000	.00
8-18	1.13	.00		0630	.60	.05		1003	.0170	.00
8-28	.15	.00		0635	.36	.08		1004	.139	.00
9 -1	.12	.00		0740	.00	.08		1005	.367	.01
9 -3	.09	.00		0750	.24	.12		1006	.808	.02
9 -4	2.59	.79		0920	.01	.14		1007	1.16	.03
				0940	.06	.16		1009	1.52	.08
				0945	.36	.19		1011	1.93	.13
				0950	.12	.20		1012	1.72	.16
				0955	.24	.22		1014	1.52	.22
				1000	.12	.23		1015	1.33	.24
				1005	1.56	.36		1016	1.13	.26
				1010	2.88	.60		1017	.925	.28
				1015	1.32	.71		1018	.808	.29
				1020	.96	.79		1019	.658	.31
				1030	.12	.81		1020	.443	.32
				1045	.04	.82		1021	.286	.32
								1024	.227	.33
								1026	.185	.34
								1028	.130	.35
								1034	.107	.36
								1036	.0923	.36
								1040	.0406	.37
								1053	.0205	.37
								1109	.0085	.38
								1134	.0027	.38
								1236	.0000	.38

Watershed conditions: 100% of area cultivated. Soil surface firm and slightly crusted with very little residue.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6940.



CHEROKEE, OKLAHOMA WATERSHED W-12



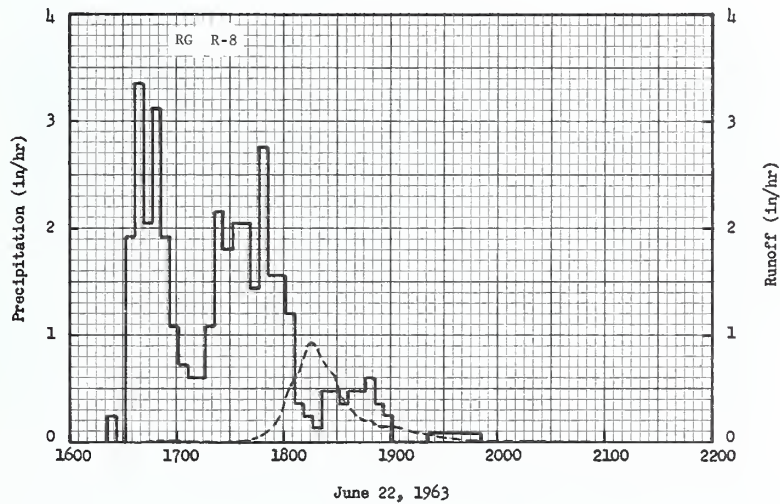
CHEROKEE, OKLAHOMA WATERSHED W-12

MONTHLY PRECIPITATION AND RUNOFF (inches)							CHEROKEE, OKLAHOMA WATERSHED W-13 AREA — 1.99 ACRES							34.13		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/ Q	.37 .00	.08 .00	1.25 .00	2.17 .00	1.98 .00	8.19 1.56	5.04 .86	1.82 T	3.74 1.24	.71 .00	1.38 .00	.13 .00	26.86 3.66		
STA	AV2/P	.26	.14	1.89	2.01	3.04	6.30	4.19	1.86	3.16	1.82	1.23	.79	26.69		
(60-63)	Q	.00	.00	.14	.02	.54	1.09	.38	.00	.38	.00	.00	T	2.55		
MEAN	P 3/ 49 YR	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-23	2.00	6-23	.90	6-23	.98	6-23	.99	6-22	1.02	6-22	1.56	6-22	1.56	6-22	1.56
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1963	6-2 1961	2.83	6-2 1961	1.16	6-2 1961	1.20	6-2 1961	1.20	6-2 1961	1.20	6-22 1963	1.56	6-22 1963	1.56	6-22 1963	1.56
NOTES: Watershed conditions: Continuous wheat annually, tillage during fallow period with chisel type field cultivator (Hoeme) to 6 inch depth with cross chiseling if necessary to obtain good tillage, final tillage before seeding wheat with a rod weeder. 1/ Precipitation data obtained from a standard gage at Rain gage 9 location. 2/ Precipitation and runoff records began July 1960. 3/ Mean P based on 49-year (1915-63) U. S. Weather Bureau record period at Cherokee, Okla., with 20 missing months between 1943-59 estimated, but 7 missing months in 1919, 20, 40, and 41 unestimated.																
1963 SELECTED RUNOFF EVENTS							CHEROKEE, OKLAHOMA WATERSHED W-13							34.13		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 22, 1963																
	RG R-9		6-22	RG	R-8		6-22									
5-29	.09	.00		1621	.00	.00		1640	.0000	.00						
5-31	1.05	.00		1626	.24	.02		1650	.0053	.00						
6-1	.11	.00		1631	.00	.02		1725	.0010	.00						
6-2	.14	.00		1636	1.92	.18		1734	.0071	.00						
6-3	.83	T		1641	3.36	.46		1744	.0305	.00						
6-8	.48	.00		1646	2.04	.63		1748	.0666	.01						
6-14	.03	.00		1651	3.12	.89		1752	.103	.01						
6-16	1.25	.00		1656	1.92	1.05		1756	.173	.02						
6-17	.09	.00		1701	1.08	1.14		1758	.231	.03						
				1706	.72	1.20		1800	.322	.04						
				1716	.60	1.30		1802	.444	.05						
				1721	1.08	1.39		1804	.522	.07						
				1726	2.16	1.57		1806	.555	.09						
				1731	1.80	1.72		1808	.643	.11						
				1741	2.04	2.06		1810	.760	.13						
				1746	1.44	2.18		1812	.843	.16						
				1751	2.76	2.41		1814	.909	.18						
				1801	1.56	2.67		1816	.931	.22						
				1806	1.20	2.77		1818	.909	.25						
				1811	.36	2.80		1820	.822	.27						
				1816	.24	2.82		1824	.720	.33						
				1821	.12	2.83		1828	.607	.37						
				1831	.48	2.91		1830	.522	.39						
				1836	.36	2.94		1835	.360	.43						
				1846	.48	3.02		1840	.263	.45						
				1851	.60	3.07		1846	.201	.47						
				1856	.36	3.10		1850	.191	.49						
				1901	.24	3.12		1854	.148	.50						
				1921	.00	3.12		1903	.148	.52						
				1951	.08	3.16		1908	.117	.53						
								1914	.0963	.54						
								1920	.0778	.55						
								1930	.0382	.56						
								1940	.0235	.56						
								1956	.0117	.57						
								2100	.0000	.57						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.0066. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.13-5.																

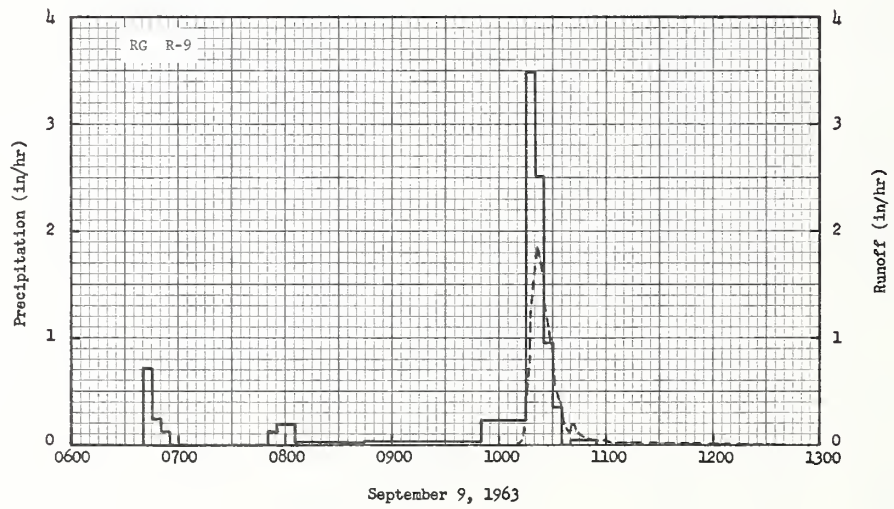
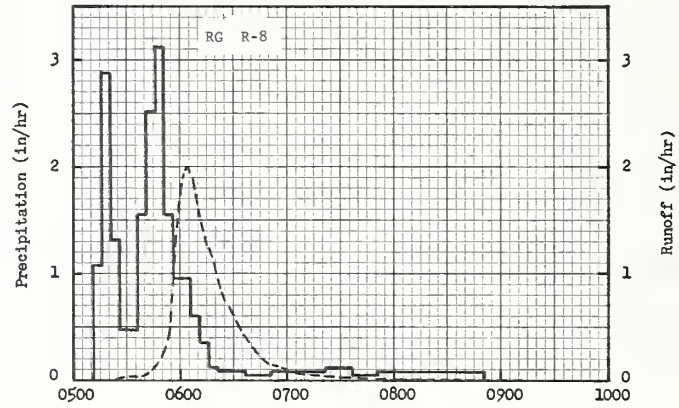
1963			SELECTED RUNOFF EVENTS				CHEROKEE, OKLAHOMA			WATERSHED W-13			34.13
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
Event of June 23, 1963													
	RG R-9		6-23	RG	R-8		6-23						
5-29	.09	.00		0511	.00	.00		0523	.0000	.00			
5-31	1.05	.00		0516	1.08	.09		0526	.0173	.00			
6 -1	.11	.00		0521	2.88	.33		0531	.0305	.00			
6 -2	.14	.00		0526	1.32	.44		0538	.0305	.00			
6 -3	.83	T		0536	.48	.52		0540	.0515	.01			
6 -8	.48	.00		0541	1.56	.65		0542	.0778	.01			
6-14	.03	.00		0546	2.52	.86		0546	.117	.02			
6-16	1.25	.00		0551	3.12	1.12		0548	.182	.02			
6-17	.09	.00		0556	1.56	1.25		0550	.252	.03			
	RG R-8			0606	.96	1.41		0553	.387	.04			
6-22	3.26	.57		0611	.60	1.46		0554	.538	.05			
6-23	1/.17	1/.00		0616	.36	1.49		0555	.681	.06			
				0621	.12	1.50		0556	.843	.07			
				0636	.08	1.52		0557	1.07	.09			
				0651	.04	1.53		0558	1.28	.11			
				0721	.08	1.57		0559	1.51	.13			
				0736	.12	1.60		0600	1.73	.16			
				0751	.04	1.61		0602	1.90	.22			
				0851	.08	1.69		0604	2.00	.28			
								0606	1.93	.35			
								0608	1.76	.41			
								0611	1.57	.50			
								0613	1.42	.54			
								0615	1.28	.59			
								0618	1.15	.65			
								0620	1.02	.69			
								0622	.909	.72			
								0624	.822	.75			
								0626	.739	.77			
								0630	.607	.82			
								0634	.474	.85			
								0638	.360	.88			
								0642	.274	.90			
								0646	.201	.92			
								0650	.164	.93			
								0654	.148	.94			
								0658	.110	.95			
								0700	.103	.95			
								0708	.0666	.97			
								0718	.0424	.97			
								0734	.0173	.98			
								0758	.0071	.99			
								0840	.0036	.99			
								0912	.0000	.99			
Event of September 9, 1963													
	RG R-9		9-9	RG	R-9		9-9						
8-17	.41	.00		0640	0.00	.00		1010	.0000	.00			
8-18	1.26	T		0645	.72	.06		1013	.0468	.00			
8-28	.15	.00		0650	.24	.08		1014	.201	.00			
9 -1	.12	.00		0655	.12	.09		1015	.444	.01			
9 -3	.09	.00		0750	.00	.09		1016	.643	.02			
9 -4	2.38	.82		0755	.12	.10		1017	.843	.03			
				0805	.18	.13		1018	1.28	.05			
				0845	.02	.14		1019	1.54	.07			
				0950	.03	.17		1020	1.70	.10			
				1015	.22	.26		1022	1.86	.16			
				1020	3.48	.55		1024	1.63	.21			
				1025	2.52	.76		1026	1.28	.26			
				1030	.96	.84		1028	1.05	.30			
				1035	.36	.87		1029	.931	.32			
Watershed conditions: 100% of area had been in wheat. After harvest the area was tilled with a Hoame chisel to a depth of 4" on June 14, 1963.													
Watershed conditions: 100% of area cultivated. Soil surface firm and slightly crusted with very little residue.													
Continued on next page													
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.0066 . 1/ PRIOR TO 0511.													

1963 SELECTED RUNOFF EVENTS			CHEROKEE, OKLAHOMA				WATERSHED W-13 34.13			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 9, 1963 - Continued										
			9-9	1040	.00	.87	9-9	1030	.801	.33
				1055	.04	.88		1031	.681	.35
								1032	.555	.36
								1034	.415	.37
								1037	.201	.39
								1038	.132	.39
								1040	.110	.39
								1042	.182	.40
								1043	.124	.40
								1046	.0778	.41
								1048	.0468	.41
								1058	.0269	.42
								1106	.0173	.42
								1121	.0071	.42
								1240	.0000	.42

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.0066 .



CHEROKEE, OKLAHOMA WATERSHED W-13



CHEROKEE, OKLAHOMA WATERSHED W-13

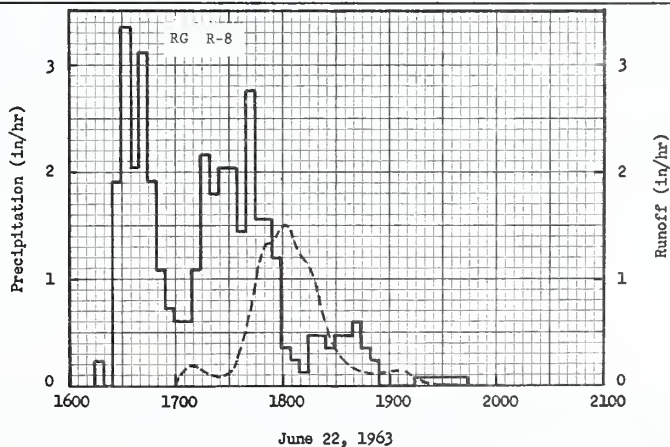
MONTHLY PRECIPITATION AND RUNOFF (inches)						CHEROKEE, OKLAHOMA WATERSHED W-14						34.14				
						AREA—2.16 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
STA AV P-1 (60-62)Q	.20 .00	.18 .00	2.21 .09	1.94 .05	3.57 .75	5.35 .76	3.08 .05	1.45 .00	2.96 .11	2.19 .01	1.18 .00	1.01 .01	25.32 1.83			
1963 P 2/ Q	.37 .00	.08 .00	1.25 .00	2.17 .00	1.98 .00	8.19 2.18	5.04 1.37	1.82 .00	3.74 .97	.71 .00	1.38 .00	.13 .00	26.86 4.52			
STA AV 3/P (60-63) Q	.26 .00	.14 .00	1.89 .06	2.01 .03	3.04 .50	6.30 1.23	3.73 .49	1.57 .00	3.16 .33	1.82 .01	1.23 .00	.79 T	25.94 2.65			
MEAN P 4/ 49 YR	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	7-28	3.15	7-28	1.20	7-28	1.36	7-28	1.37	7-28	1.37	6-22	2.18	6-22	2.18	6-22	2.18
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1963	7-28 1963	3.15	7-28 1963	1.20	7-28 1963	1.36	7-28 1963	1.37	7-28 1963	1.37	6-22 1963	2.18	6-22 1963	2.18	6-22 1963	2.18
Notes: Watershed conditions: Continuous wheat annually, first tillage during fallow period with one-way disc harrow shallow (2 in. to 2½ in.), succeeding tillages with chisel type field cultivator (Hoeme) to maximum depth of 6 inches and final tillage before seeding wheat with same tool with sweeps on shanks. 1/ Station averages for Sept. 1962 Q and Annual published in Ref. 6 have been revised and new values underlined. 2/ Precipitation data obtained from a standard gage at rain gage 9 location. 3/ Precipitation and runoff records began September 1960. 4/ Mean P based on 49-yr (1915-63) U.S. Weather Bureau record period at Cherokee, Okla., with 20 missing months between 1943-59 estimated, but 7 missing months in 1919, 20, 40, and 41 unestimated.																
1963 SELECTED RUNOFF EVENTS						CHEROKEE, OKLAHOMA WATERSHED W-14						34.14				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 22, 1963																
	RG R-9		6-22	RG	R-8		6-22									
5-29	.09	.00		1614	.00	.00		1658	.0000	.00						
5-31	1.05	.00		1619	.24	.02		1700	.0216	.00						
6-1	.11	.00		1624	.00	.02		1701	.0517	.00						
6-2	.14	.00		1629	1.92	.18		1702	.0946	.00						
6-3	.83	T		1634	3.36	.46		1704	.128	.01						
6-8	.48	.00		1639	2.04	.63		1708	.193	.02						
6-14	.03	.00		1644	3.12	.89		1710	.202	.02						
6-16	1.25	.00		1649	1.92	1.05		1712	.184	.03						
6-17	.09	.00		1654	1.08	1.14		1714	.159	.04						
				1659	.72	1.20		1718	.121	.04						
				1709	.60	1.30		1720	.101	.05						
				1714	1.08	1.39		1724	.0826	.05						
				1719	2.16	1.57		1728	.101	.06						
				1724	1.80	1.72		1732	.136	.07						
				1734	2.04	2.06		1733	.184	.07						
				1739	1.44	2.18		1734	.241	.07						
				1744	2.76	2.41		1735	.273	.08						
				1754	1.56	2.67		1736	.330	.08						
				1759	1.20	2.77		1738	.464	.10						
				1804	.36	2.80		1740	.558	.11						
				1809	.24	2.82		1742	.698	.13						
				1814	.12	2.83		1744	.876	.16						
				1824	.48	2.91		1746	1.08	.19						
				1829	.36	2.94		1747	1.18	.21						
				1839	.48	3.02		1748	1.23	.23						
				1844	.60	3.07		1750	1.30	.27						
				1849	.36	3.10		1751	1.33	.30						
				1854	.24	3.12		1755	1.33	.39						
				1914	.00	3.12		1758	1.44	.45						
				1944	.08	3.16		1800	1.50	.50						
								1803	1.50	.58						
								1806	1.38	.65						
								1808	1.30	.70						
								1810	1.20	.74						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1780. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.14-4.																

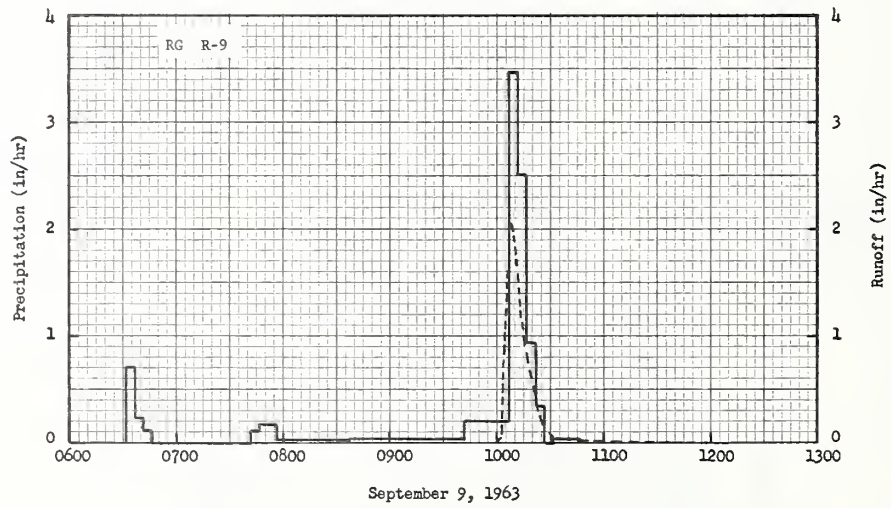
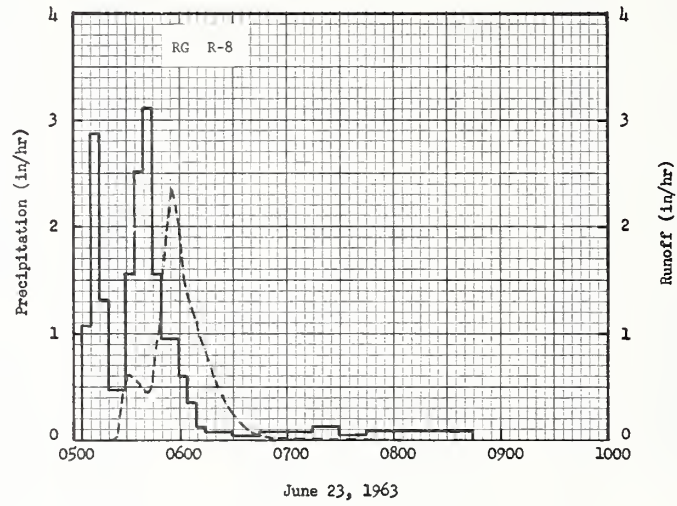
1963			SELECTED RUNOFF EVENTS				CHEROKEE, OKLAHOMA				WATERSHED W-14				34.14	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 22, 1963 - Continued																
							6-22	1814	1.15	.82						
								1816	1.08	.85						
								1818	.985	.89						
								1820	.855	.92						
								1822	.698	.94						
								1824	.591	.96						
								1826	.494	.98						
								1828	.394	1.00						
								1832	.284	1.02						
								1834	.231	1.03						
								1838	.184	1.04						
								1842	.151	1.05						
								1846	.121	1.06						
								1850	.107	1.07						
								1856	.107	1.08						
								1900	.121	1.09						
								1905	.143	1.10						
								1910	.121	1.11						
								1914	.0826	1.12						
								1916	.0662	1.12						
								1920	.0315	1.12						
								1926	.0159	1.13						
								1930	.0066	1.13						
								2005	.0000	1.13						
Event of June 23, 1963																
	RG R-9		6-23	RG	R-8		6-23	0520	.0000	.00						
5-29	.09	.00		0504	.00	.00		0524	.0107	.00						
5-31	1.05	.00		0509	1.08	.09		0525	.0280	.00						
6-1	.11	.00		0514	2.88	.33		0526	.151	.00						
6-2	.14	.00		0519	1.32	.44		0527	.307	.01						
6-3	.83	T		0529	.48	.52		0529	.525	.02						
6-8	.48	.00		0534	1.56	.65		0530	.574	.03						
6-14	.03	.00		0539	2.52	.86		0532	.608	.05						
6-16	1.25	.00		0544	3.12	1.12		0536	.574	.09						
6-17	.09	.00		0549	1.56	1.25		0538	.525	.11						
	RG R-8			0559	.96	1.41		0542	.435	.14						
6-22	3.26	1.13		0604	.60	1.46		0544	.494	.15						
6-23	1/.17	1/.00		0609	.36	1.49		0545	.625	.16						
				0614	.12	1.50		0546	.774	.18						
				0629	.08	1.52		0547	.897	.19						
				0644	.04	1.53		0548	1.08	.21						
				0714	.08	1.57		0549	1.25	.22						
				0729	.12	1.60		0550	1.44	.25						
				0744	.04	1.61		0551	1.62	.27						
				0844	.08	1.69		0552	1.87	.30						
								0553	2.08	.33						
								0554	2.25	.37						
								0555	2.37	.41						
								0557	2.29	.49						
								0558	2.15	.52						
								0600	1.87	.59						
								0602	1.56	.65						
								0604	1.36	.70						
								0606	1.23	.74						
								0608	1.15	.78						
								0610	1.03	.82						
								0612	.941	.85						
								0614	.855	.88						
								0616	.735	.90						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1780 . 1/ PRIOR TO 0504.																

1963			SELECTED RUNOFF EVENTS				CHEROKEE, OKLAHOMA		WATERSHED W-14		34.14
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of June 23, 1963 - Continued											
							6-23	0618	.643	.93	
								0620	.558	.95	
								0622	.479	.97	
								0624	.408	.98	
								0626	.343	.99	
								0628	.295	1.00	
								0630	.252	1.01	
								0632	.212	1.02	
								0636	.143	1.03	
								0640	.0826	1.04	
								0646	.0430	1.05	
								0654	.0216	1.05	
								0658	.0085	1.05	
								0702	.0033	1.05	
								0804	.0000	1.05	
Event of September 9, 1963											
	RG R-9		9-9	RG	R-9		9-9	1000	.0000	.00	
8-17	.41	.00		0632	.00	.00		1003	.0612	.00	
8-18	1.26	.00		0637	.72	.06		1004	.558	.01	
8-28	.15	.00		0642	.24	.08		1005	1.18	.02	
9-1	.12	.00		0647	.12	.09		1006	1.53	.04	
9-3	.09	.00		0742	.00	.09		1007	1.68	.07	
9-4	2.38	.55		0747	.12	.10		1008	2.04	.10	
				0757	.18	.13		1010	1.84	.17	
				0837	.02	.14		1012	1.56	.22	
				0942	.03	.17		1013	1.38	.25	
				1007	.22	.26		1014	1.18	.27	
				1012	3.48	.55		1016	.941	.30	
				1017	2.52	.76		1018	.794	.33	
				1022	.96	.84		1020	.625	.36	
				1027	.36	.87		1022	.464	.37	
				1032	.00	.87		1024	.284	.39	
				1047	.04	.88		1026	.167	.39	
								1028	.107	.40	
								1030	.0826	.40	
								1034	.0517	.41	
								1038	.0280	.41	
								1042	.0159	.41	
								1052	.0066	.41	
								1210	.0000	.41	
Watershed conditions: 100% of area cultivated. Soil surface firm and slightly crusted with very little residue.											

Watershed conditions: 100% of area cultivated. Soil surface firm and slightly crusted with very little residue.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1780 .





CHEROKEE, OKLAHOMA WATERSHED W-11

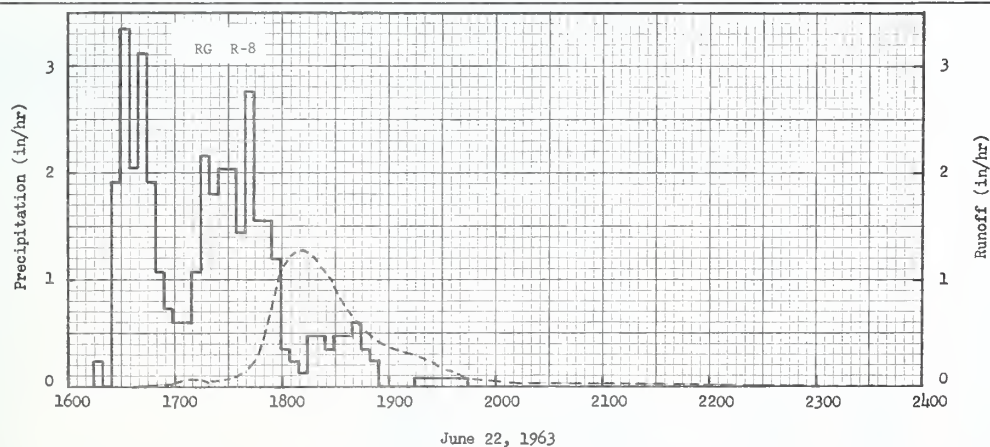
MONTHLY PRECIPITATION AND RUNOFF (inches)						CHEROKEE, OKLAHOMA WATERSHED W-15 AREA — 2.15 ACRES								34.15		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.35 .00	.07 .00	1.27 .00	2.11 .00	1.99 .00	8.16 2.90	4.96 .79	1.86 .01	3.63 .91	.73 .00	1.36 .00	.13 .00	26.62 4.61			
STA AV ² /P (60-63) Q	.27 .00	.14 .00	1.87 .18	1.97 .05	3.00 .84	6.22 1.49	3.64 .27	1.52 T	3.06 .30	1.78 T	1.21 .01	.79 .01	25.47 3.15			
MEAN P ³ / 49 YR	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-23	2.41	6-23	1.30	6-23	1.53	6-23	1.58	6-22	1.67	6-22	2.90	6-22	2.90	6-22	2.90
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1963	6-2 1961	2.64	6-23 1963	1.30	6-23 1963	1.53	6-23 1963	1.58	6-22 1963	1.67	6-22 1963	2.90	6-22 1963	2.90	6-22 1963	2.90
Notes: Watershed conditions: Continuous wheat annually, tillage during fallow period with large sweeps (8 ft.), final tillage before seeding wheat with a rod weeder. 1/ Precipitation data obtained from a standard gage at rain gage 8 location. 2/ Precipitation and runoff records began September 1960. 3/ Mean P based on 49-yr (1915-63) U.S. Weather Bureau record period at Cherokee, Okla., with 20 missing months between 1943-59 estimated, but 7 missing months in 1919, 20, 40, and 41 unestimated.																
1963 SELECTED RUNOFF EVENTS						CHEROKEE, OKLAHOMA WATERSHED W-15								34.15		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 22, 1963																
	RG R-8		6-22	RG	R-8		6-22									
5-22	.10	.00		1614	.00	.00		1636	.0000	.00						
5-31	1.05	.00		1619	.24	.02		1658	.0124	.00						
6-1	.12	.00		1624	.00	.02		1700	.0266	.00						
6-2	.12	.00		1629	1.92	.18		1704	.0543	.00						
6-3	.82	T		1634	3.36	.46		1709	.0714	.01						
6-8	.48	.00		1639	2.04	.63		1714	.0597	.02						
6-14	.03	.00		1644	3.12	.89		1717	.0490	.02						
6-16	1.24	.00		1649	1.92	1.05		1721	.0597	.02						
6-17	.09	.00		1654	1.08	1.14		1731	.0714	.03						
				1659	.72	1.20		1736	.112	.04						
				1709	.60	1.30		1740	.143	.05						
				1714	1.08	1.39		1743	.198	.06						
				1719	2.16	1.57		1745	.262	.07						
				1724	1.80	1.72		1748	.361	.08						
				1734	2.04	2.06		1750	.478	.09						
				1739	1.44	2.18		1752	.595	.11						
				1744	2.76	2.41		1754	.726	.13						
				1754	1.56	2.67		1756	.871	.16						
				1759	1.20	2.77		1758	1.01	.19						
				1804	.36	2.80		1800	1.08	.23						
				1809	.24	2.82		1802	1.15	.26						
				1814	.12	2.83		1805	1.23	.32						
				1824	.48	2.91		1808	1.28	.39						
				1829	.36	2.94		1812	1.28	.47						
				1839	.48	3.02		1816	1.23	.56						
				1844	.60	3.07		1820	1.18	.64						
				1849	.36	3.10		1824	1.08	.71						
				1854	.24	3.12		1828	.983	.78						
				1914	.00	3.12		1830	.893	.81						
				1944	.08	3.16		1834	.766	.87						
								1838	.687	.92						
								1842	.595	.96						
								1847	.510	1.00						
								1850	.463	1.03						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1679 . FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994 , P. 34.15-4.																

1963			SELECTED RUNOFF EVENTS				CHEROKEE, OKLAHOMA		WATERSHED W-15		34.15
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of June 22, 1963 - Continued											
							6-22	1856	.403	1.07	
								1903	.361	1.12	
								1910	.322	1.16	
								1917	.285	1.19	
								1923	.239	1.22	
								1926	.218	1.23	
								1930	.160	1.24	
								1936	.127	1.26	
								1940	.104	1.26	
								1950	.0775	1.28	
								2000	.0490	1.29	
								2015	.0228	1.30	
								2030	.0096	1.30	
								2048	.0049	1.31	
								2140	.0014	1.31	
								2340	.0000	1.31	
Event of June 23, 1963											
	RG R-8		6-23	RG	R-8		6-23				
5-22	.10	.00		0504	.00	.00		0517	.0000	.00	
5-31	1.05	.00		0509	1.08	.09		0526	.0306	.00	
6 -1	.12	.00		0514	2.88	.33		0532	.0228	.01	
6 -2	.12	.00		0519	1.32	.44		0534	.0393	.01	
6 -3	.82	T		0529	.48	.52		0536	.0775	.01	
6 -8	.48	.00		0534	1.56	.65		0538	.179	.01	
6-14	.03	.00		0539	2.52	.86		0542	.309	.03	
6-16	1.24	.00		0544	3.12	1.12		0544	.361	.04	
6-17	.09	.00		0549	1.56	1.25		0548	.463	.07	
6-22	3.26	1.31		0559	.96	1.41		0550	.578	.08	
6-23	1/.17	1/.00		0604	.60	1.46		0552	.726	.11	
				0609	.36	1.49		0553	.893	.12	
				0614	.12	1.50		0554	1.08	.14	
				0629	.08	1.52		0555	1.23	.16	
				0644	.04	1.53		0556	1.51	.18	
				0714	.08	1.57		0557	1.70	.21	
				0729	.12	1.60		0558	1.86	.23	
				0744	.04	1.61		0559	2.03	.27	
				0844	.08	1.69		0600	2.14	.30	
								0602	2.29	.38	
								0604	2.41	.45	
								0606	2.29	.53	
								0608	2.18	.61	
								0610	2.03	.68	
								0614	1.80	.80	
								0616	1.60	.86	
								0618	1.51	.91	
								0620	1.40	.96	
								0624	1.20	1.05	
								0626	1.10	1.09	
								0630	.983	1.16	
								0633	.893	1.20	
								0636	.786	1.25	
								0640	.687	1.29	
								0644	.578	1.34	
								0647	.510	1.36	
								0650	.432	1.39	
								0656	.361	1.43	
								0700	.297	1.45	
								0705	.239	1.47	
								0710	.198	1.49	
								0714	.160	1.50	
								0720	.127	1.52	
								0728	.0838	1.53	
Continued on next page											
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1679 . 1/ PRIOR TO 0504.											

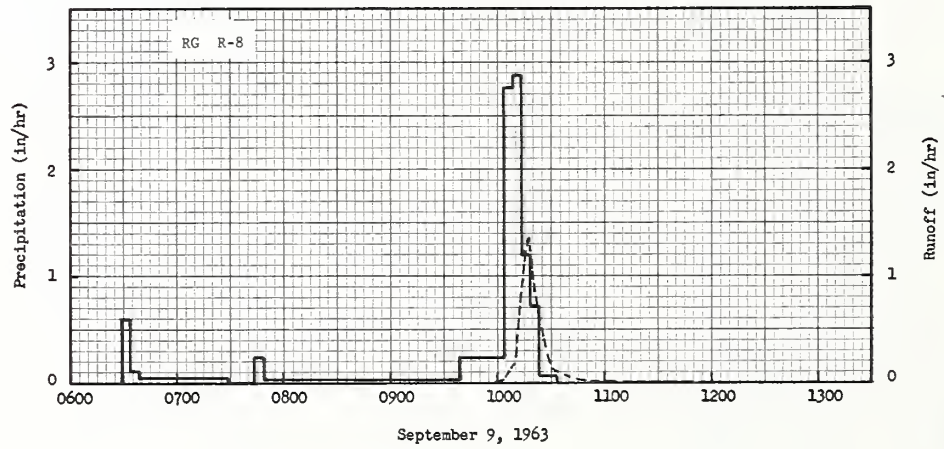
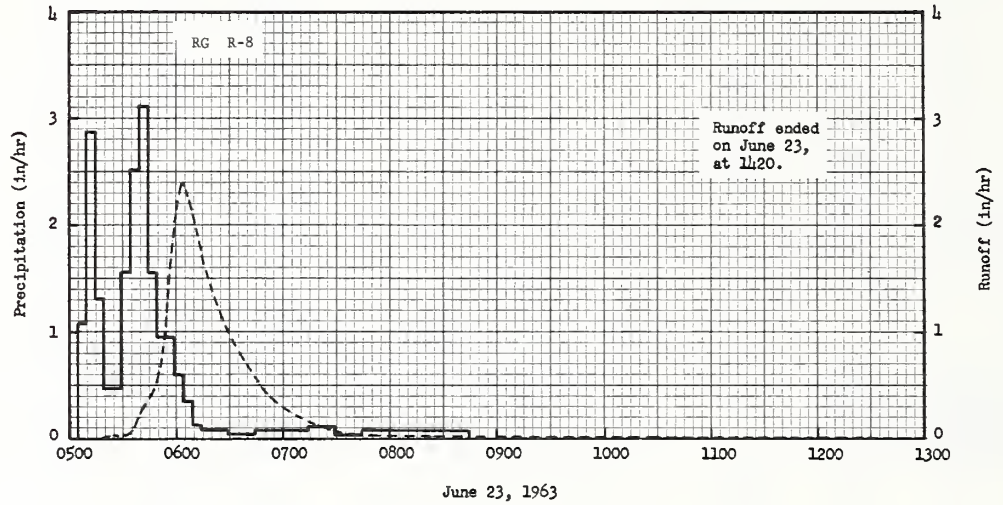
1963			SELECTED RUNOFF EVENTS				CHEROKEE, OKLAHOMA		WATERSHED W-15		34.15	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
<u>Event of June 23, 1963 - Continued</u>												
							6-23	0732	.0714	1.54		
								0740	.0543	1.54		
								0749	.0393	1.55		
								0800	.0306	1.56		
								0815	.0155	1.56		
								0900	.0071	1.57		
								1050	.0049	1.58		
								1230	.0014	1.59		
								1420	.0000	1.59		
<u>Event of September 9, 1963</u>												
	RG R-8		9-9	RG	R-8		9-9					
8-17	.36	.00		0628	.00	.00		0958	.0000	.00		
8-18	1.34	.01		0633	.60	.05		1003	.0306	.00		
8-28	.16	.00		0638	.12	.06		1006	.104	.00		
9 -1	.12	.00		0728	.04	.09		1008	.160	.01		
9 -3	.09	.00		0743	.00	.09		1009	.188	.01		
9 -4	2.26	.62		0748	.24	.11		1010	.361	.02		
				0938	.02	.15		1011	.510	.02		
				1003	.24	.25		1012	.706	.03		
				1008	2.76	.48		1013	.828	.05		
				1013	2.88	.72		1014	.983	.06		
				1018	1.20	.82		1015	1.18	.08		
				1023	.72	.88		1017	1.37	.12		
				1033	.06	.89		1018	1.26	.14		
								1020	1.01	.18		
								1022	.766	.21		
								1024	.543	.23		
								1026	.418	.25		
								1028	.262	.26		
								1030	.179	.27		
								1031	.127	.27		
								1034	.0972	.28		
								1038	.0775	.28		
								1040	.0597	.28		
								1044	.0393	.29		
								1048	.0228	.29		
								1055	.0096	.29		
								1111	.0030	.29		
								1130	.0014	.29		
								1300	.0000	.29		
Watershed conditions: 100% of area cultivated. Soil surface firm and slightly crusted with very little residue.												

Watershed conditions: 100% of area cultivated. Soil surface firm and slightly crusted with very little residue.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1679 .



CHEROKEE, OKLAHOMA WATERSHED W-15

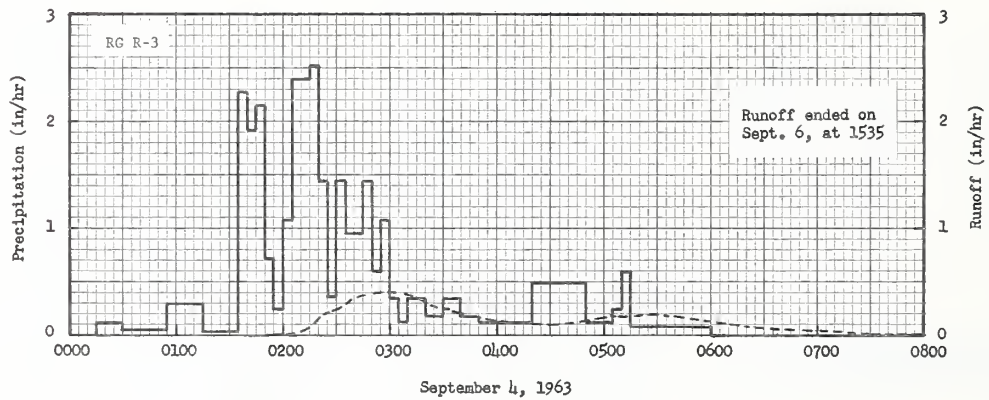


CHEROKEE, OKLAHOMA WATERSHED W-15

MONTHLY PRECIPITATION AND RUNOFF (inches)						STILLWATER, OKLAHOMA AREA—16.7 ACRES						WATERSHED W-1 37.1				
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.45 .16	.01 .00	3.20 1.30	1.56 .18	3.59 .18	1.90 .02	5.80 .13	4.58 .09	5.14 1.50	2.72 .39	1.66 .44	.57 .14	31.18 4.53			
STA AV2/P (51-63) Q	.52 .08	1.07 .17	2.22 .81	2.20 .59	5.48 1.99	4.14 1.13	4.72 .85	2.54 .06	3.48 .43	2.85 .80	1.43 .28	1.06 .21	31.71 7.40			
MEAN P 3/ 71 YR	1.10	1.26	2.13	3.43	4.78	4.14	3.12	3.03	3.71	2.89	2.05	1.34	32.98			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-4	.41	9-4	.34	9-4	.52	9-4	.90	9-4	.92	9-4	.94	3-30	.96	3-30	1.04
MAXIMUMS FOR PERIOD OF RECORD																
1951 TO 1963	4-18 1957	6.99	7-15 1951	3.31	7-15 1951	3.74	7-15 1951	3.96	10-2 1959	4.52	7-14 1951	5.18	10-1 1959	5.68	9-29 1959	7.62
NOTES: Watershed conditions: All native grass pasture, in good condition with moderate grazing from the middle of May to the last of September. 1/ Precipitation data obtained from R-3 recording rain gage. 2/ Precipitation and runoff records began July 1951. 3/ Mean P based on 71-yr (1893-1963) U. S. Weather Bureau record period at Stillwater, Okla.																
GENERALLY REPRESENTS: (Revision) Reddish Prairies problem area changed to Central Rolling Red Prairies land resource area (H-80).																
GEOLOGY: Permian red beds consisting of interbedded shales and sandstones but predominantly shales, probably in the upper part of the Chase group. The dip is to the west and is about 50 feet per mile. Soil depth is variable from zero to an unknown depth. Source of information - Geology Department, Oklahoma State University.																
1963 SELECTED RUNOFF EVENT						STILLWATER, OKLAHOMA						WATERSHED W-1 37.1				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG R-3			Event of September 4, 1963												
				RG	R-3											
8-7	.08	.000	9-4	0015	.00	.00	9-4	0141	.0000	.000						
8-9	.18	.000		0030	.12	.03		0155	.0089	.001						
8-12	1.78	.019		0055	.05	.05		0205	.0190	.003						
8-13	.00	.018		0115	.30	.15		0211	.0452	.006						
8-14	.00	.002		0135	.03	.16		0216	.0964	.012						
8-18	.50	.000		0140	2.28	.35		0222	.176	.026						
8-28	1.34	.001		0145	1.92	.51		0226	.225	.040						
8-29	.70	.046		0150	2.16	.69		0233	.283	.069						
8-30	.00	.004		0155	.72	.75		0240	.347	.106						
9-1	.22	.000		0200	.24	.77		0257	.410	.213						
				0205	1.08	.86		0301	.410	.240						
				0215	2.40	1.26		0314	.347	.322						
				0220	2.52	1.47		0324	.283	.375						
				0225	1.44	1.59		0335	.225	.422						
				0230	.36	1.62		0346	.184	.459						
				0235	1.44	1.74		0404	.134	.507						
				0245	.96	1.90		0419	.107	.537						
				0250	1.44	2.02		0428	.101	.552						
				0255	.60	2.07		0435	.107	.564						
				0300	1.08	2.16		0445	.123	.583						
				0305	.36	2.19		0456	.154	.609						
				0310	.12	2.20		0505	.176	.634						
				0320	.36	2.26		0513	.184	.658						
				0330	.18	2.29		0528	.198	.705						
				0340	.36	2.35		0540	.184	.744						
				0350	.18	2.38		0603	.129	.804						
				0420	.12	2.44		0621	.0917	.837						
				0450	.50	2.69		0647	.0482	.867						
				0505	.12	2.72		0714	.0274	.883						
				0510	.24	2.74		0728	.0214	.889						
				0515	.60	2.79		0805	.0122	.899						
				0600	.09	2.86		0921	.0053	.909						
				ceased				1048	.0032	.915						
				1100	.00	2.86		1630	.0017	.929						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 16.839. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. '945, P. 37.1-7.																

1963 SELECTED RUNOFF EVENT			STILLWATER, OKLAHOMA				WATERSHED W-1			37.1	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
			<u>Event of September 4, 1963 — Continued</u>								
			9-4	1105 ceased	.24	2.88	9-4	2400	.0008	.938	
				1110	.00	2.88	9-5	1200	.0008	.948	
				1120	.24	2.92		2400	.0004	.955	
							9-6	1200	.0004	.960	
								1535	.0000	.961	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 16.839.



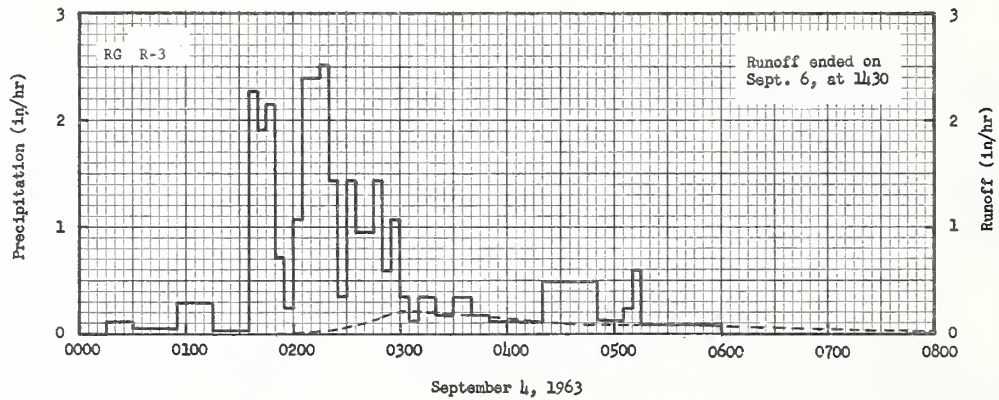
STILLWATER, OKLAHOMA WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)						STILLWATER, OKLAHOMA WATERSHED W-3 AREA — 92.0 ACRES								37.2		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/ Q	.45 .02	.01 .00	3.20 .61	1.56 .05	3.59 .17	1.90 .00	5.80 .02	4.58 .06	5.14 .82	2.72 .14	1.66 .13	.57 .03	31.18 2.05		
	STA AV2/P (51-63) Q	.52 .05	1.07 .11	2.22 .64	2.20 .51	5.48 1.84	4.14 .98	4.72 .85	2.53 .07	3.48 .39	2.85 .75	1.43 .15	1.06 .11	31.70 6.45		
	MEAN P 3/ 71 YR	1.10	1.26	2.13	3.43	4.78	4.14	3.12	3.03	3.71	2.89	2.05	1.34	32.98		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-4	.21	9-4	.19	9-4	.32	9-4	.55	9-4	.58	9-4	.59	9-4	.59	8-29	.60
MAXIMUMS FOR PERIOD OF RECORD																
1951 TO 1963	7-15 1951	4.74	7-15 1951	2.87	7-15 1951	3.49	7-15 1951	3.80	10-2 1959	4.96	10-1 1959	5.18	10-1 1959	6.08	9-30 1959	8.08
NOTES: Watershed conditions: All native grass cover, 32 percent of watershed area in hay meadow and 68 percent in pasture which was grazed from the middle of May to the last of September. 1/ Precipitation data obtained from R-3 recording rain gage. 2/ Precipitation and runoff records began July 1951. 3/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Stillwater, Okla.																
GENERALLY REPRESENTS: (Revision) Reddish Prairies problem area changed to Central Rolling Red Prairies land resource area (H-80).																
GEOLOGY: Permian red beds consisting of interbedded shales and sandstones but predominantly shales, probably in the upper part of the Chase group. The dip is to the west and is about 50 feet per mile. Soil depth is variable from zero to an unknown depth. Source of information: Geology Department, Oklahoma State University.																
1963 SELECTED RUNOFF EVENT						STILLWATER, OKLAHOMA WATERSHED W-3								37.2		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
RG R-3			Event of September 4, 1963													
8-7	.08	.000	9-4	0015	.00	.00	9-4	0151	.0000	.000						
8-9	.18	.000		0030	.12	.03		0208	.0091	.001						
8-12	1.78	.041		0055	.05	.05		0211	.0204	.002						
8-13	.00	.006		0115	.30	.15		0213	.0156	.002						
8-18	.50	.000		0135	.03	.16		0217	.0190	.003						
8-28	1.34	.000		0140	2.28	.35		0222	.0404	.006						
8-29	.70	.014		0145	1.92	.51		0228	.0594	.011						
8-30	.00	.001		0150	2.16	.69		0235	.0751	.019						
9-1	.22	.000		0155	.72	.75		0240	.105	.026						
				0200	.24	.77		0249	.163	.046						
				0205	1.08	.86		0252	.182	.054						
				0215	2.40	1.26		0301	.208	.084						
				0220	2.52	1.47		0304	.210	.094						
				0225	1.44	1.59		0312	.212	.122						
				0230	.36	1.62		0318	.208	.143						
				0235	1.44	1.74		0322	.204	.157						
				0245	.96	1.90		0336	.186	.203						
				0250	1.44	2.02		0355	.156	.257						
				0255	.60	2.07		0410	.126	.292						
				0300	1.08	2.16		0421	.105	.313						
				0305	.36	2.19		0438	.0882	.341						
				0310	.12	2.20		0500	.0864	.372						
				0320	.36	2.26		0542	.0880	.434						
				0330	.18	2.29		0624	.0704	.491						
				0340	.36	2.35		0658	.0428	.523						
				0350	.18	2.38		0723	.0291	.538						
				0420	.12	2.44		0751	.0189	.549						
				0450	.50	2.69		0825	.0116	.558						
				0505	.12	2.72		0920	.0060	.565						
				0510	.24	2.74		1058	.0026	.572						
				0515	.60	2.79		1208	.0022	.575						
				0600	.09	2.86		1420	.0014	.579						
				ceased				1630	.0008	.581						
				1100	.00	2.86		2400	.0004	.585						
Continued on next page.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 92.766. FOR MAP OF WATERSHED, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 37.2-6.																

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

1963 SELECTED RUNOFF EVENT			STILLWATER, OKLAHOMA				WATERSHED W-3		37.2	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
			Event of September 4, 1963 — Continued							
			9-4	1105 ceased 1110 1120	.24 .00 .24	2.88 2.88 2.92	9-5	1200 2400	.0002 .0001	.589 .591
							9-6	0930 1430	.0001 .0000	.592 .592

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 92.766.



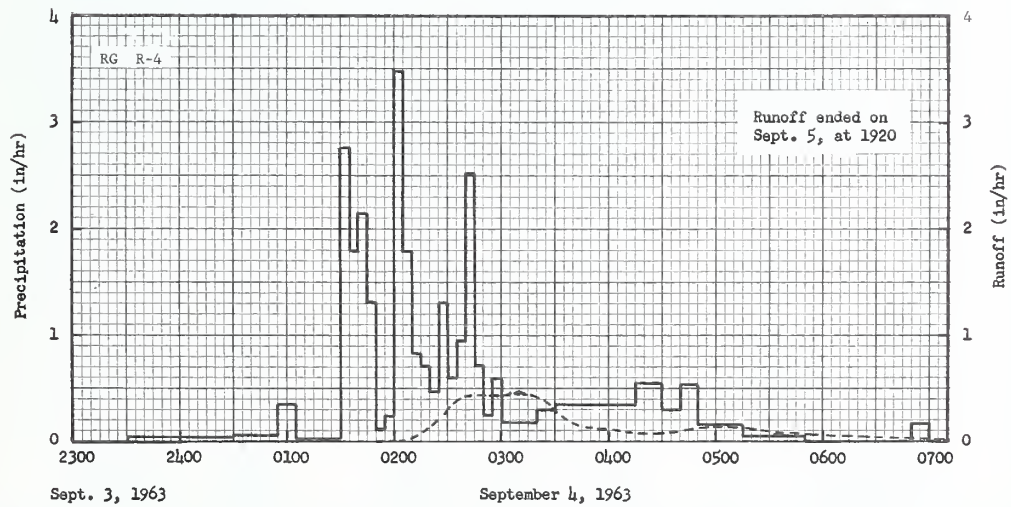
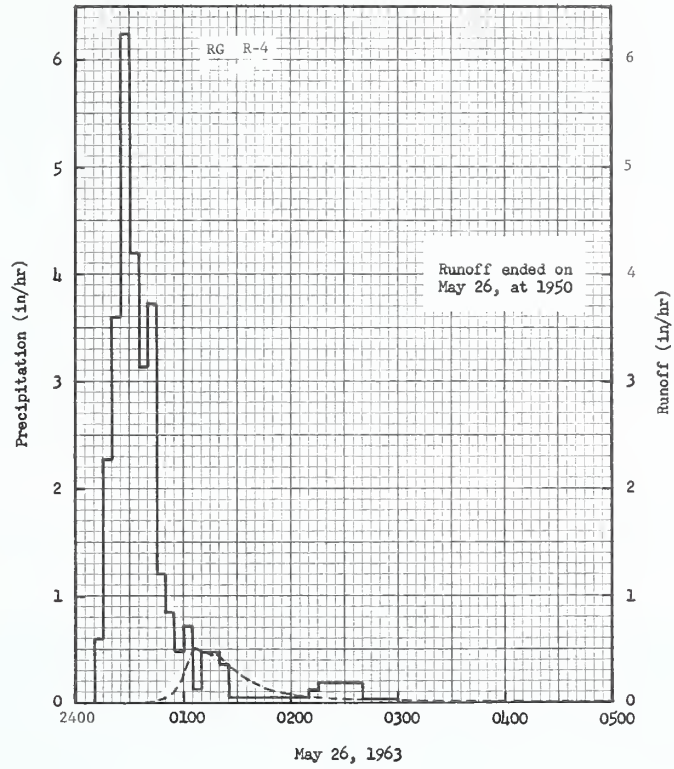
STILLWATER, OKLAHOMA WATERSHED W-3

MONTHLY PRECIPITATION AND RUNOFF (inches)						STILLWATER, OKLAHOMA WATERSHED W-4 AREA - 206 ACRES								37.3		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q T	.45 T	.00 T	3.26 .29	1.45 T	3.46 .38	1.72 .00	6.19 .24	4.70 .19	5.12 1.01	3.17 .26	1.67 .04	.46 T	31.65 2.41			
STA A2/P (51-63) Q	.47 .09	1.02 .10	2.20 .45	2.11 .36	5.22 1.51	3.93 .94	4.46 .68	2.59 .08	3.45 .43	2.87 .68	1.35 .14	1.00 .09	30.67 5.55			
MEAN P 3/ 71 YR	1.10	1.26	2.13	3.43	4.78	4.14	3.12	3.03	3.71	2.89	2.05	1.34	32.98			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	5-26	.51	9-4	.42	9-4	.57	9-4	.82	9-4	0.84	9-4	.85	9-4	.86	8-28	.89
MAXIMUMS FOR PERIOD OF RECORD																
1951 TO 1963	4-18 1957	2.39	4-18 1957	1.48	4-18 1957	1.75	10-2 1959	2.63	10-2 1959	4.49	10-2 1959	4.71	10-1 1959	5.23	9-30 1959	6.77
NOTES: Watershed conditions: All native grass cover, 17.3 percent of watershed area in hay meadow and 82.7 percent in pasture. The pasture portion was overgrazed again this year and was generally in poor to fair condition by November. 1/ Precipitation data obtained from R-4 recording rain gage. 2/ Precipitation and runoff records began July 1951. 3/ Mean P based on 71-yr (1893-1963) U. S. Weather Bureau record period at Stillwater, Okla.																
GENERALLY REPRESENTS: (Revision) Reddish Prairies problem area changed to Central Rolling Red Prairies land resource area (H-80).																
GEOLOGY: Permian red beds consisting of interbedded shales and sandstones but predominantly shale, probably in the upper part of the Chase group. The dip is to the west and is about 50 feet per mile. Soil depth is variable from zero to an unknown depth. Source of information: Geology Department, Oklahoma State University.																
1963 SELECTED RUNOFF EVENTS						STILLWATER, OKLAHOMA WATERSHED W-4						37.3				
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF										
DATE MO-OAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-OAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-OAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of May 26, 1963																
	RG R-4			RG	R-4											
4-27	.06	.0000	5-26	0010	.00	.00	5-26	0037	.0000	.0000						
5-2	.01	.0000		0015	.60	.05		0040	.0058	.0003						
5-4	.23	.0000		0020	2.28	.24		0044	.0120	.0008						
5-14	.19	.0000		0025	3.60	.54		0047	.0316	.0019						
5-16	.10	.0000		0030	6.24	1.06		0049	.0554	.0032						
5-19	.01	.0000		0035	4.20	1.41		0054	.0947	.0094						
5-22	.09	.0000		0040	3.12	1.67		0056	.143	.0134						
5-24	.04	.0000		0045	3.72	1.98		0058	.201	.0191						
5-25	4/.07	.0000		0050	1.20	2.08		0100	.278	.0271						
				0055	.84	2.15		0103	.410	.0444						
				0100	.48	2.19		0105	.472	.0590						
				0105	.72	2.25		0106	.506	.0672						
				0110	.12	2.26		0108	.503	.0840						
				0120	.48	2.34		0113	.473	.1233						
				0125	.36	2.37		0118	.456	.1620						
				0210	.04	2.40		0124	.382	.2040						
				0215	.12	2.41		0129	.316	.2330						
				0240	.19	2.49		0132	.262	.2475						
				0300	.03	2.50		0136	.216	.2635						
Watershed conditions: 100% of area in native grass, 17.3% in meadow and 82.7% in pasture. The hay crop from the meadow was excellent. Pasture condition was only fair to good due to overgrazing.																
								0139	.179	.2733						
								0144	.150	.2871						
								0149	.124	.2985						
								0155	.102	.3098						
								0202	.0824	.3206						
								0209	.0651	.3292						
								0222	.0430	.3407						
								0237	.0269	.3492						
								0248	.0205	.3536						
								0312	.0123	.3600						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 207.72. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 37.3-6. 4/ RAIN ENDED AT 2355																

1963 SELECTED RUNOFF EVENTS			STILLWATER, OKLAHOMA				WATERSHED W-4		37.3	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of May 26, 1963—Continued										
							5-26	0345	.0074	.3652
								0404	.0058	.3673
								0502	.0031	.3714
								0630	.0016	.3746
								0820	.0009	.3769
								1050	.0005	.3784
								1950	.0000	.3806
Event of September 3-4, 1963										
	RG R-4			RG	R-4					
8 -7	.11	.0000	9-3	2330	.00	.00	9-4	0150	.0000	.0000
8 -9	.20	.0000		2400	.04	.02		0153	.0020	.0001
8-12	2.06	.1417						0200	.0100	.0006
8-13	.00	.0115	9-4	0030	.04	.04		0208	.0183	.0023
8-18	.52	.0000		0055	.05	.06		0212	.0430	.0044
8-28	1.16	.0010		0105	.36	.12		0216	.0929	.0090
8-29	.65	.0356		0130	.02	.13		0220	.140	.0165
9 -1	.18	.0000		0135	2.76	.36		0224	.190	.0274
9 -2	T	.0000		0140	1.80	.51		0228	.250	.0420
				0145	2.16	.69		0232	.332	.0613
				0150	1.32	.80		0235	.375	.0790
				0155	.12	.81		0240	.425	.1124
				0200	.24	.83		0244	.438	.1412
				0205	3.48	1.12		0250	.446	.1853
				0210	1.80	1.27		0300	.442	.2593
				0215	.84	1.34		0306	.456	.3042
				0220	.72	1.40		0312	.464	.3502
				0225	.48	1.44		0317	.449	.3882
				0230	1.32	1.55		0323	.411	.4312
				0235	.60	1.60		0327	.360	.4569
				0240	.96	1.68		0330	.300	.4734
				0245	2.52	1.89		0333	.256	.4873
				0250	.72	1.95		0340	.184	.5127
				0255	.24	1.97		0345	.154	.5268
				0300	.60	2.02		0400	.107	.5584
				0320	.18	2.08		0409	.0958	.5736
				0330	.30	2.13		0424	.0903	.5969
				0415	.36	2.40		0433	.0963	.6108
				0430	.56	2.54		0445	.107	.6312
				0440	.30	2.59		0459	.132	.6594
				0450	.54	2.68		0507	.137	.6774
				0515	.17	2.75		0516	.128	.6973
				0550	.05	2.78		0525	.116	.7156
				0650	.01	2.79		0538	.0946	.7385
				0700	.18	2.82		0550	.0763	.7556
				ceased				0612	.0508	.7788
				1020	.00	2.82		0656	.0213	.8038
				1100	.03	2.84		0742	.0102	.8151
				1200	.02	2.86		0857	.0052	.8240
				1300	.01	2.87		1059	.0028	.8317
				1342	.03	2.89		1730	.0011	.8428
								2400	.0008	.8487
							9-5	0345	.0005	.8513
								1445	.0002	.8556
								1920	.0000	.8561

Watershed conditions: 100% of area in native grass, 17.3% in meadow and 82.7% in pasture. The new growth of grass in fair condition due to precipitation being 4-inches below normal at this time.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 207.72.

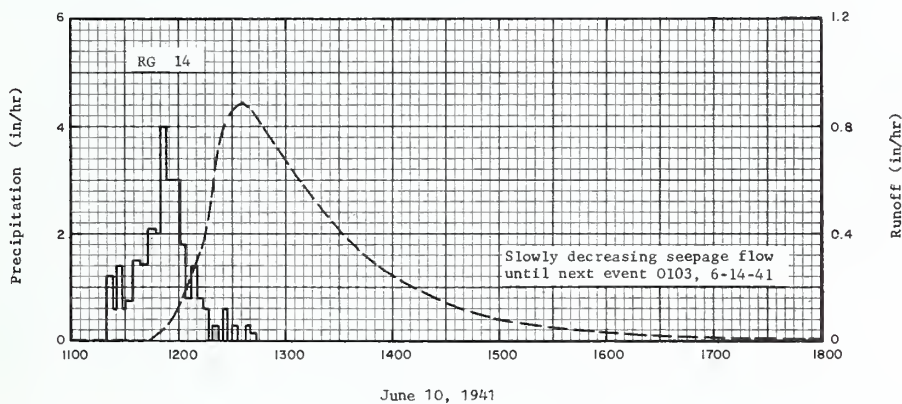


STILLWATER, OKLAHOMA WATERSHED W-4

MONTHLY PRECIPITATION AND RUNOFF (inches)							RIESEL (WACO), TEXAS					WATERSHED C		42.02			
							AREA — 579 ACRES										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963 P ^{1/}	.49	1.31	1.06	1.85	3.79	2.80	.76	.33	1.79	1.10	4.66	1.78	21.72				
Q	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.01	.07				
STA AV ^{2/}	1.79	2.75	1.81	3.67	3.86	3.98	1.47	1.82	2.71	2.89	3.03	2.30	32.08				
(39-63) Q	.38	.50	.26	.89	.77	.67	.18	.02	.43	.32	.38	.53	5.33				
MEAN P ^{3/}																	
75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963	11-17	.03	11-17	.02	11-17	.03	11-17	.04	11-17	.05	11-17	.05	11-17	.05	11-17	.05	
MAXIMUMS FOR PERIOD OF RECORD																	
1938 TO 1963 ^{4/}	4-19 1957	1.33E	4-19 1957	1.33E	4-19 1957	2.02E	4-23 1957	2.80	9-7 1942	3.06	9-7 1942	3.19	9-7 1942	4.78	4-19 1957	8.76E	
NOTES: Watershed land use: 60% pasture; 8% grain sorghum; 2% oats; 2% cotton; 2% roads; 26% other. Approx. 90% of "other" is non-tilled, non-pastured conservation reserve. ^{1/} Precipitation data from Thiessen method using rain gages 5, 14, and 20. ^{2/} Precipitation and runoff records began Dec. 1937; station not in operation July 1943 to Mar. 1, 1949; part-year amounts not included in averages. ^{3/} Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. ^{4/} No maximums 1938, 1944-1948; maximums for 1943 occurred before July, and for 1949 after Mar. 1.																	
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																	
GEOLOGY: Sandy marl unit, Wolfe City member of Taylor marl formation, Upper Cretaceous (Culf) series, Cretaceous system. Depth to Wolfe City - 2 ft. to 8 ft.; thickness 100 ft. Strike N 20° E; dip SE 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																	
1941 SELECTED RUNOFF EVENT							RIESEL (WACO), TEXAS					WATERSHED C		42.02			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
	3 RG 5/		Event of June 10-14, 1941														
5-11	.09	.0000		RG	14		6-10	1115	.0004	.0000							
5-12	.00	T	6-10	1119	.00	.00		1122	.0004	.0000 T							
5-17	.07	.0000		1123	1.20	.08		1130	.0005	.0001							
5-19	1.86	.5269		1125	.60	.10		1138	.0010	.0002							
5-20	.74	.4324		1128	1.40	.17		1143	.0028	.0003							
5-21	.01	.0192		1130	.60	.19		1145	.0060	.0005							
5-22	.45	.0900		1134	.75	.24		1148	.0160	.0010							
5-23	.00	.0147		1138	1.50	.34		1150	.0277	.0017							
5-24	.00	.0010		1143	1.44	.46		1153	.0531	.0037							
5-25	.13E	.0001		1147	2.10	.60		1157	.0923	.0084							
5-26	.00	T		1150	2.00	.70		1200	.1390	.0142							
5-27	.00	T		1153	4.00	.90		1205	.2040	.0284							
5-28	.04	.0000		1201	3.00	1.30		1212	.3100	.0582							
5-29	.18E	T		1204	1.80	1.39		1217	.4420	.0891							
5-30	.00	T		1207	.80	1.43		1222	.6940	.1352							
5-31	.00	T		1210	1.40	1.50		1228	.8360	.2116							
6-02	.94	.0788		1213	.80	1.54		1230	.8630	.2399							
6-03	.17	.0223		1217	.60	1.58		1236	.8820	.3272							
6-04	T	.0017		1218	.00	1.58		1240	.8630	.3854							
6-05	.00	.0001		1222	.30	1.60		1245	.8270	.4558							
6-06	1.54	.4850		1225	.00	1.60		1255	.7280	.5854							
6-07	.04	.1829		1227	.60	1.62		1310	.5700	.7480							
6-08	.00	.0026		1230	.00	1.62		1330	.4130	.9106							
6-09	.55	.0882		1234	.30	1.64		1352	.2860	1.0383							
6-10	.00	.00001		1238	.00	1.64		1422	.1650	1.1480							
				1240	.30	1.65		1442	.1160	1.1946							
				1244	.15	1.66		1512	.0630	1.2386							
				RG	2	1.54		1537	.0406	1.2599							
				RG	31	1.64		1608	.0252	1.2739							
				3 RC	AVC 5/	1.59		1652	.0152	1.2904							
Watershed conditions: See next page.																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 583.82. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.4-6. ^{5/} THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 2, 14, AND 31. ^{6/} RUNOFF PRIOR TO EVENT BEGINNING AT 1115.																	

1941			SELECTED RUNOFF EVENT				RIESEL (WACO), TEXAS		WATERSHED C		42.02	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
Event of June 10-14, 1941 - Continued												
Watershed conditions: 23% of area in cotton, early fruiting stage; 23% corn in tassel stage; 14% pasture; 8% Johnsongrass; 9% idle cropland; 5% sudan; 3% oats stubble; 3% fallow; 3% hegari; 2% grain sorghum; 2% millet; 5% farmsteads and gravel roads. Cultivation in straight rows except for the 37% terraced with contour rows.							6-10	1810	.0077	1.3046		
								1930	.0047	1.3127		
								2120	.0027	1.3191		
							6-11	2400	.0016	1.3248		
								0415	.0009	1.3298		
								1040	.0004	1.3338		
								1555	.0002	1.3355		
							6-12	2400	.0001	1.3368		
								0815	.0001	1.3369		
								2400	T	1.3380		
							6-13	2400	T	1.3381		
							6-14	0103	1/	T	1.3381	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 583.82. 1/ BEGINNING OF NEXT EVENT.

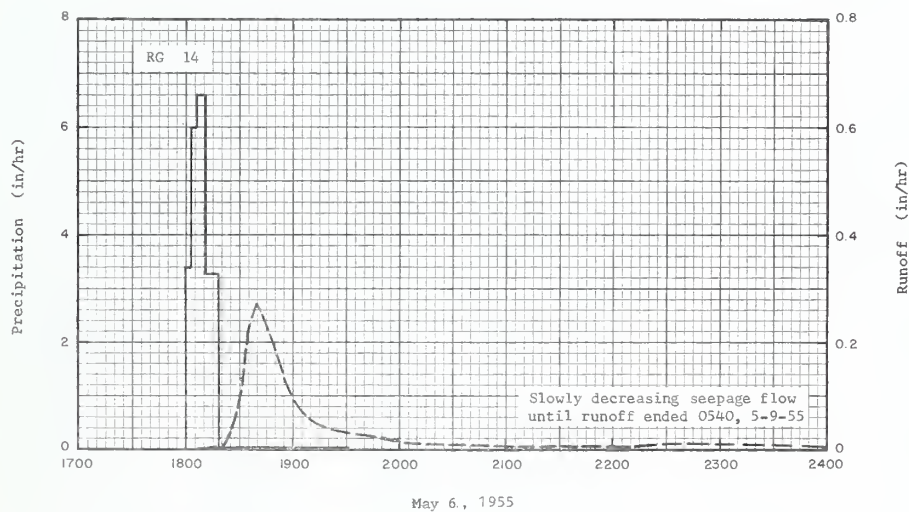


RIESEL (WACO), TEXAS WATERSHED C

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED D		42.03						
						AREA—1,110 ACRES (1.73 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P ^{1/}	.49	1.30	1.09	1.86	3.74	2.91	.64	.38	1.78	1.07	4.49	1.82	21.57			
Q	.00	.00	.00	.00	T	T	.00	.00	.00	.00	.02	T	5/ .03			
STA AV ^{2/} P	1.90	2.75	1.91	3.67	3.78	4.04	1.55	1.73	2.62	2.71	2.92	2.31	31.89			
(38-63) Q	.43	.50	.28	.96	.88	.67	.20	.03	.40	.31	.35	.50	5.51			
MEAN P ^{3/} 75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	11-18	.01	11-18	.01	11-18	.01	11-18	.02	11-18	.02	11-17	.02	11-17	.02	11-17	.02
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963 ^{4/}	4-19 1957	1.03E	4-19 1957	.90E	4-19 1957	1.77E	4-23 1957	3.43	4-23 1957	3.54	4-23 1957	3.72	4-23 1957	5.42	4-19 1957	9.66E
NOTES: Watershed land use: 45% pasture; 6% oats; 5% grain sorghum; 5% cotton; 3% corn; 2% roads; 34% other. Approx. 90% of "other" is non-tilled, non-pastured conservation reserve. ^{2/} Precipitation data from Thiessen method using rain gages 5, 14, 20, and 26A. ^{3/} Precipitation and runoff records began Dec. 1937; station not in operation July 1943 to Mar. 1, 1949; part-year amounts not included in averages. ^{4/} Mean P based on 75-yr (1889-1963) U.S. Weather Bureau record period at Waco, Tex. ^{5/} No maximums 1938, 1944-1948; maximums for 1943 occurred before July, and for 1949 after Mar. 1. ^{5/} Traces add up to .01 inch of runoff.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to <u>Texas Blackland</u> <u>Prairie land resource area (J-86).</u>																
GEOLOGY: 97 percent sandy marl and 3 percent silty marl units, Wolfe City member of Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Depth to Wolfe City - 2 ft. to 8 ft.; thickness - sandy marl 100 ft., silty marl 30 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1955 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED D		42.03						
ANTECEDENT CONOITIONS			RAINFALL			RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of May 6-9, 1955																
4-08	.60	.0000	5-06	RG	14		5-06	1807	.0000	.0000						
4-09	1.78	.3567		1800	.00	.00		1811	.0001							
4-10	.16	.2382		1803	3.40	.17		1814	.0003							
4-11	.00	.0046		1806	6.00	.47		1818	.0008	.0001						
4-12	.16	.0015		1811	6.60	1.02		1821	.0021	.0001						
4-13	.00	.0001		1818	3.26	1.40		1825	.0322	.0009						
4-20	.04	.0000		1931	.01	1.41		1828	.0698	.0034						
4-28	.01	.0000		2201	T	1.42		1831	.1094	.0076						
Watershed conditions: Land Use For 1955 not available; data shown is 1957; no major changes between 1955 and 1957. 33% of area in corn planted in mid- March; 24% Bermudagrass pasture; 17% cotton planted late April; 9% row grain sorghum planted early April; 7% fall-seeded sweet clover; 4% broadcast grain sorghum planted early April; 2% fall-seeded oats- clover; 1% fall-seeded oats; 3% farmsteads and gravel roads.				RG	5	1.38		1833	.1820	.0125						
				RG	20	1.14		1836	.2380	.0231						
				3 RG	AVG 6/	1.33		1838	.2610	.0313						
								1840	.2730	.0402						
								1842	.2610	.0491						
								1846	.2290	.0653						
								1848	.2010	.0725						
								1854	.1430	.0899						
								1902	.0850	.1042						
								1909	.0570	.1120						
								1922	.0384	.1221						
								1938	.0254	.1303						
								2000	.0164	.1377						
								2024	.0104	.1428						
								2100	.0064	.1478						
								2126	.0049	.1502						
								2212	.0032	.1532						
								2218	.0056	.1536						
								2226	.0088	.1547						
								2233	.0093	.1557						
								2250	.0088	.1582						
								2329	.0069	.1633						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1119.25. FOR MAP OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.4-6. 6/ THIENSEN WEIGHTED RAINFALL USING RAIN GAGES 5, 14, AND 20.																

1955 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED D		42.03
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF		
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
Event of May 6-9, 1955— Continued									
							5-06	2400	•0055
							5-07	0124	•0031
								0328	•0016
								1040	•0004
								1609	•0001
								2400	•0001
							5-08	0305	T •1846
								2400	T •1850
							5-09	0540	•0000 •1850

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1119.25.

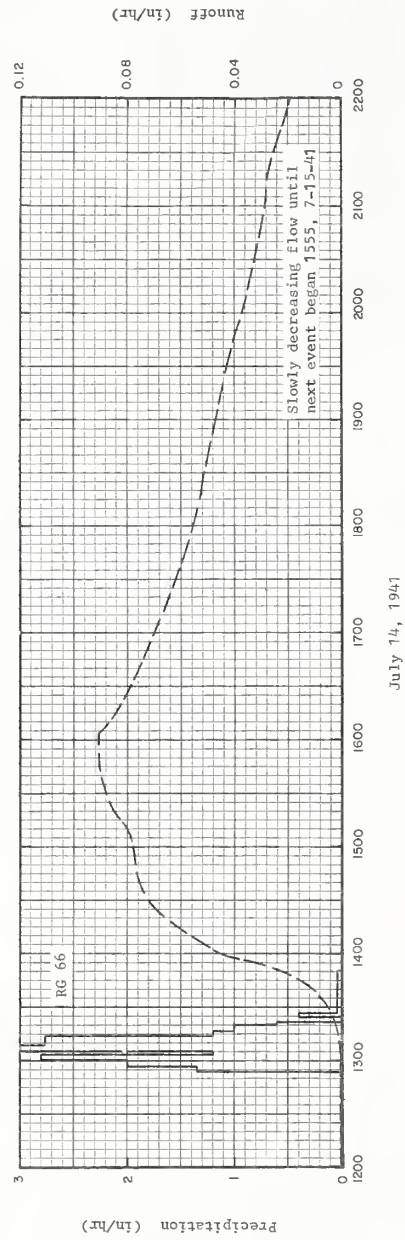


RIESEL (WACO), TEXAS WATERSHED D

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED G		42.04						
						AREA—4,380 ACRES (6.84 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P ^{1/}	.52	1.30	.99	2.06	2.76	3.37	.34	.82	1.10	1.62	3.92	1.82	20.62			
Q	.00	.00	.00	.00	.00	T	T	.00	.00	.00	.00	.00	T			
STA AV ^{2/}	2.15	2.93	1.61	3.19	3.03	5.59	1.82	2.15	2.67	2.97	3.00	2.77	33.88			
(38-63) Q	.75	.72	.21	.40	.36	1.18	.18	.06	.45	.21	.54	.63	5.69			
MEAN P ^{3/}																
75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-25	T	6-25	T	6-25	T	6-25	T	6-25	T	6-25	T	6-25	T	6-25	T
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963 ^{4/}	11-22	.42	11-22	.40	11-22	.72	11-22	1.54	11-22	1.94	11-22	2.74	11-22	4.18	11-22	4.82
1940	1940		1940		1940		1940		1940		1940		1940		1940	
NOTES: Watershed land use: 29% pasture; 11% corn; 7% grain sorghum; 5% cotton; 5% oats; 2% roads; 41% other. Approx. 90% of "other" is non-tilled, non-pastured conservation reserve. ^{1/} Precipitation data from Thiessen method using rain gages 5, 14, 20, 26A, 30A, 43A, 48A, 56A, 65A, 70, 74A, 84A, and 89. ^{2/} Precipitation and runoff records began Jan. 1938; station not in operation July 1943 to July 1, 1957; part year amounts not included in averages. ^{3/} Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. ^{4/} No maximums 1944 through 1957; maximums for 1943 occurred before July 1.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Approximately 80 percent of upper portion of watershed underlain by Wolfe City member of Taylor marl Formation, Upper Cretaceous (Gulf) series, Cretaceous system. Lower 20 percent of area Pecan Gap member of Taylor marl overlies the Wolfe City member. Approximately 50 percent of the Wolfe City member is the sandy marl unit, thickness 100 ft. On the remaining 50 percent of the Wolfe City, the sandy marl is overlain by the silty marl unit, thickness 40 ft. Approximately 30 percent of the Pecan Gap member consists of the lower chalk unit, 0-25 ft. thick. On the remaining 70 percent of the Pecan Gap, the lower chalk is overlain by the lower highly calcareous marl unit, 40 ft. thick on hill tops. Depth to marl 0-8 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1961 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED G		42.04						
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
10 RG 5/												Event of July 14-15, 1941				
6-14	.70	.2085	7-14	R6	27		7-14	1020	.0002	.0000						
6-15	.00	.0135		1236	.00	.00		1302	.0002	.0004						
6-16	.44	.1460		1237	1.20	.02		1316	.0006	.0005						
6-17	.00	.0042		1241	.00	.02		1320	.0011	.0006						
6-18	.00	.0009		1243	1.20	.06		1326	.0030	.0008						
6-19	.00	.0003	7-14	1245	2.40	.14		1332	.0058	.0012						
6-20	.00	.0001		1247	1.80	.20		1335	.0080	.0016						
6-21	.00	T		1253	3.60	.56		1340	.0119	.0024						
6-22	T	T		1256	1.20	.62		1345	.0164	.0036						
6-23	.59	.0030		1301	3.60	.92		1350	.0217	.0052						
6-24	.00	.0234	7-14	1305	4.50	1.22		1355	.0217	.0074						
6-25	.00	.0035		1307	3.00	1.32		1358	.0430	.0093						
6-26	.52	.0367		1310	.40	1.34		1403	.0494	.0132						
6-27	.12	.0129		R6	.66			1410	.0575	.0195						
6-28	.00	.0011		1253	.00	.00		1415	.0612	.0244						
6-29	.00	.0001	7-14	1257	1.35	.09		1425	.0695	.0354						
6-30	.00	T		1300	2.00	.19		1435	.0748	.0474						
7-01	.00	T		1303	2.80	.33		1452	.0775	.0691						
7-03	.13	.0000		1305	1.20	.37		1515	.0829	.0998						
7-04	.07	.0000		1309	3.00	.57		1530	.0883	.1212						
7-11	1.56	.0019	7-14	1314	2.76	.80		1539	.0899	.1346						
7-12	.36	.0103		1317	1.20	.86		1551	.0904	.1526						
7-13	.49	.0660		1320	1.00	.91		1603	.0906	.1707						
7-14	.00	.0034		1322	.60	.93		1616	.0838	.1897						
				1324	.00	.93		1627	.0793	.2046						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4416.48. FOR MAP OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.4-6. ^{5/} THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 5, 14, 27, 31, 44, 55, 66, 70, 82, AND 85. ^{6/} RUNOFF PRIOR TO EVENT BEGINNING AT 1020.																

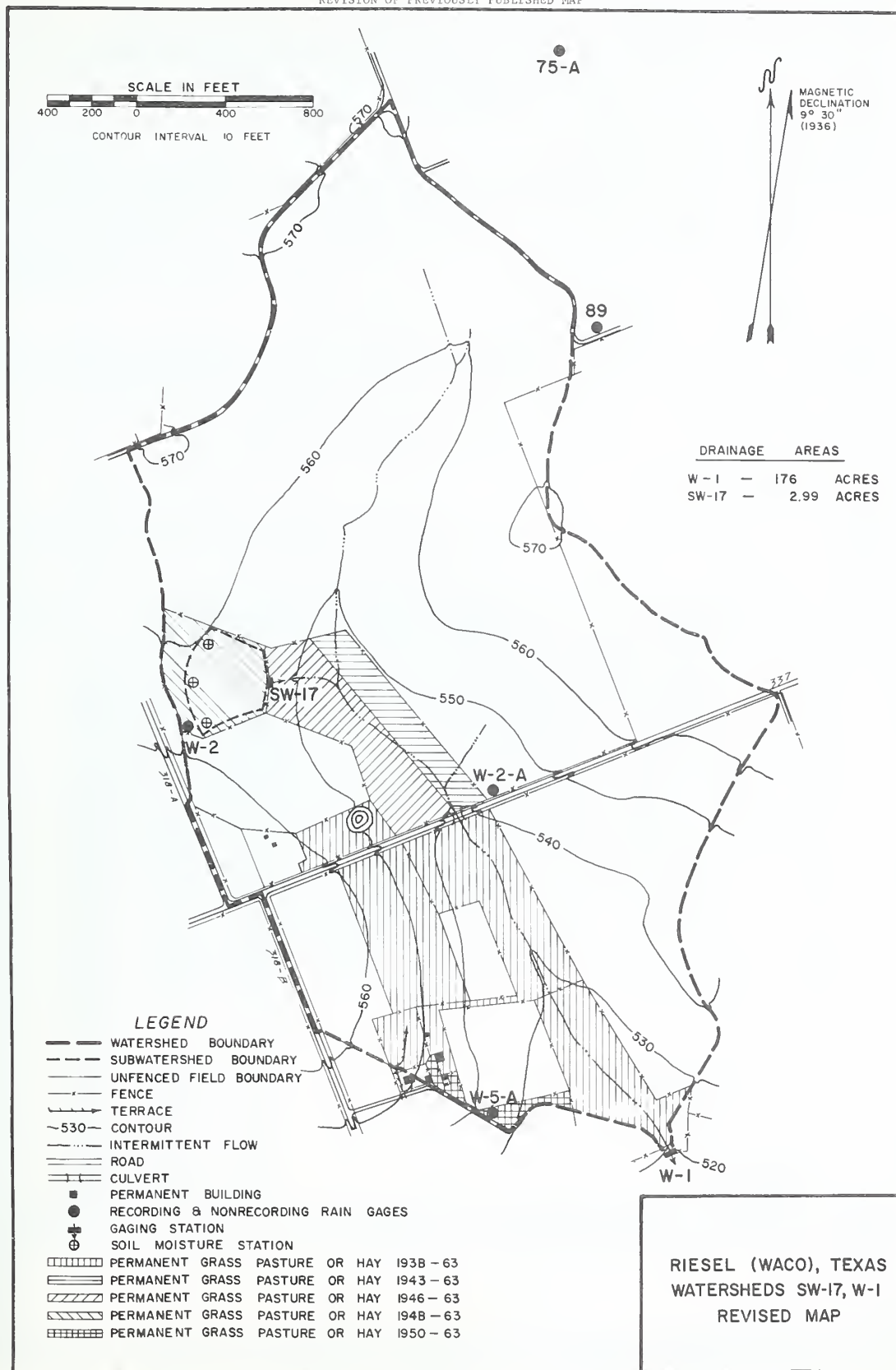
1941 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED G 42.04			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of July 14-15, 1941—Continued										
Watershed conditions: 26% of area in corn in hard dough stage; 26% cotton, heavy fruiting stage; 12% Bermudagrass pasture; 8% grain sorghum and hegari in hard dough stage; 2% millet; 4% sudan; 6% oats stubble; 6% idle cropland; 3% fallow; 2% native grass meadow; 2% miscellaneous crops; 3% farmsteads and gravel roads.			7-14	1327	.40	.95	7-14	1645	.0739	.2276
			7-14	1350	.03	.96		1700	.0698	.2456
				RG	.85			1740	.0598	.2885
			7-14	1303	.00	.00		1820	.0526	.3260
				1306	1.20	.06		1854	.0476	.3543
				1309	.00	.06		1935	.0417	.3848
				1311	3.60	.18		1955	.0381	.3981
				1314	4.40	.40		2015	.0349	.4103
				1317	3.40	.57		2040	.0313	.4241
				1321	.60	.61		2055	.0294	.4317
				1323	.90	.64		2120	.0270	.4435
				1330	.17	.66		2140	.0229	.4518
				RG	.5	.85		2210	.0173	.4618
				RG	.14	.74		2250	.0115	.4714
				RG	.31	1.05		2335	.0068	.4781
				RG	.44	1.51		2400	.0053	.4806
				RG	.55	.98		0050	.0035	.4842
				RG	.70	.98		0245	.0020	.4893
				RG	.82	.87		0510	.0013	.4932
				10 RG	AVG 1/	1.05		0845	.0009	.4970
								1355	.0005	.5006
								1555	2/ .0005	.5016

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4416.48. 1/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 5, 14, 27, 31, 44, 55, 66, 70, 82, AND 85. 2/ BEGINNING OF NEXT EVENT.



RIESEL (WACO), TEXAS WATERSHED G

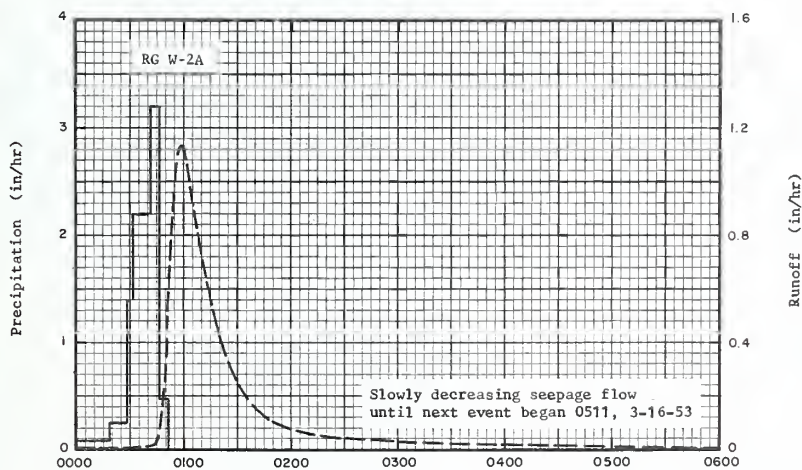
REVISION OF PREVIOUSLY PUBLISHED MAP



MONTHLY PRECIPITATION AND RUNOFF (inches)							RIESEL (WAGO), TEXAS		WATERSHED W-1		42.06					
							AREA—176 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963 P 1/2 Q STA AV2/3 P (38-63) Q		.49	1.43	.97	2.38	1.79	2.60	.12	1.71	.56	1.93	3.33	1.71	19.02		
		.01	.01	T	.01	T	.00	.00	.00	.00	.00	.00	.00	.02		
		2.24	2.72	2.40	3.91	4.34	3.58	1.60	1.71	2.20	2.63	2.92	2.66	32.91		
		.50	.61	.53	.99	1.19	.62	.10	.02	.15	.21	.41	.50	5.83		
MEAN P2/7 75 YR		2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	.01	4-4	.01	4-4	.01
MAXIMUMS FOR PERIOD OF RECORD																
19 37 TO 19 63 3/4	5-1 1944	4.51	5-1 1944	2.99	5-1 1944	5.57	5-1 1944	6.91	5-1 1944	6.92	5-1 1944	7.05	4-30 1944	9.20	4-29 1944	11.06
NOTES: Watershed land use: 32% cotton; 25% corn; 21% oats; 17% pasture; 3% roads; 2% native grass meadow. Straight row cultivation; without terraces. 1/2 Precipitation data from Thiessen method using rain gages 75A, 89, W-2, W-2A, and W-5A. 2/3 Precipitation and runoff records began July 1937; part-year amounts not included in averages. 3/4 Mean P based on 75-yr (1889-1963) U.S. Weather Bureau record period at Waco, Tex. 4/ No maximums for 1937.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Depth to Pecan Gap - 3 ft. to 10 ft.; thickness 40-75 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1953 SELECTED RUNOFF EVENT							RIESEL (WAGO), TEXAS		WATERSHED W-1		42.06					
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 12-16, 1953																
2-10	4 RG 5/ 1.20	.0217	3-12	RG	W-2A		3-12	0000	.0031	.0000						
2-11	.24	.0622		0000	.00	.00		0015	.0029	.0008						
2-12	.00	.0001		0019	.09	.03		0025	.0029	.0012						
2-13	.00	T		0029	.24	.07		0030	.0031	.0015						
2-14	.20	.0003		0032	1.40	.14		0039	.0053	.0021						
2-15	.00	T	4 RG	0041	2.20	.47	4 RG	0042	.0100	.0024						
2-16	.00	T		0047	3.20	.79		0044	.0189	.0029						
2-18	.09	.0001		0052	.48	.83		0046	.0540	.0040						
2-19	.03	.0002		RG	75A	.91		0049	.1460	.0088						
2-20	.00	T		RG	89	.85		0052	.5270	.0236						
2-23	.40	.0006		RG	W-4	.77		0055	1.0100	.0633						
2-24	.11	.0008		4 RG	AVG 5/ .84			0056	1.0800	.0806						
2-25	.03	.0002						0057	1.1200	.0990						
2-26	.00	.0001						0058	1.1300	.1177						
2-27	.00	.0001						0059	1.1300	.1365						
2-28	.00	T						0100	1.1100	.1551						
3-01	.00	T	3-10	0102			3-11	0102	1.0600	.1913						
3-02	.09	.0002		0105				0105	.9430	.2412						
3-03	.00	.0001		0110				0110	.7340	.3099						
3-05	.00	T		0115				0115	.5600	.3645						
3-06	.00	T		0120				0120	.4280	.4052						
3-07	.00	.0001	3-11	0125				0125	.3200	.4364						
3-08	.17	.0002		0130				0130	.2480	.4601						
3-09	1.02	.0175		0135				0135	.1880	.4781						
3-10	.72	.2348		0141				0141	.1420	.4946						
3-11	6/ .44	7/ .1681		0149				0149	.1080	.5110						
Watershed conditions: See next page.				0155				0155	.0943	.5211						
				0205				0205	.0717	.5346						
				0216				0216	.0559	.5460						
				0230				0230	.0449	.5577						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 177.47 (ERRONEOUSLY GIVEN AS 177.41 FOR MAY 13, 1957 THROUGH JULY 16-17, 1961 EVENTS.) 5/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES W-2A, 75A, 89, AND W-4. 6/ RAINFALL FOR 3-11 ENDED AT 1815. 7/ RUNOFF FROM 0000 TO 2400.																

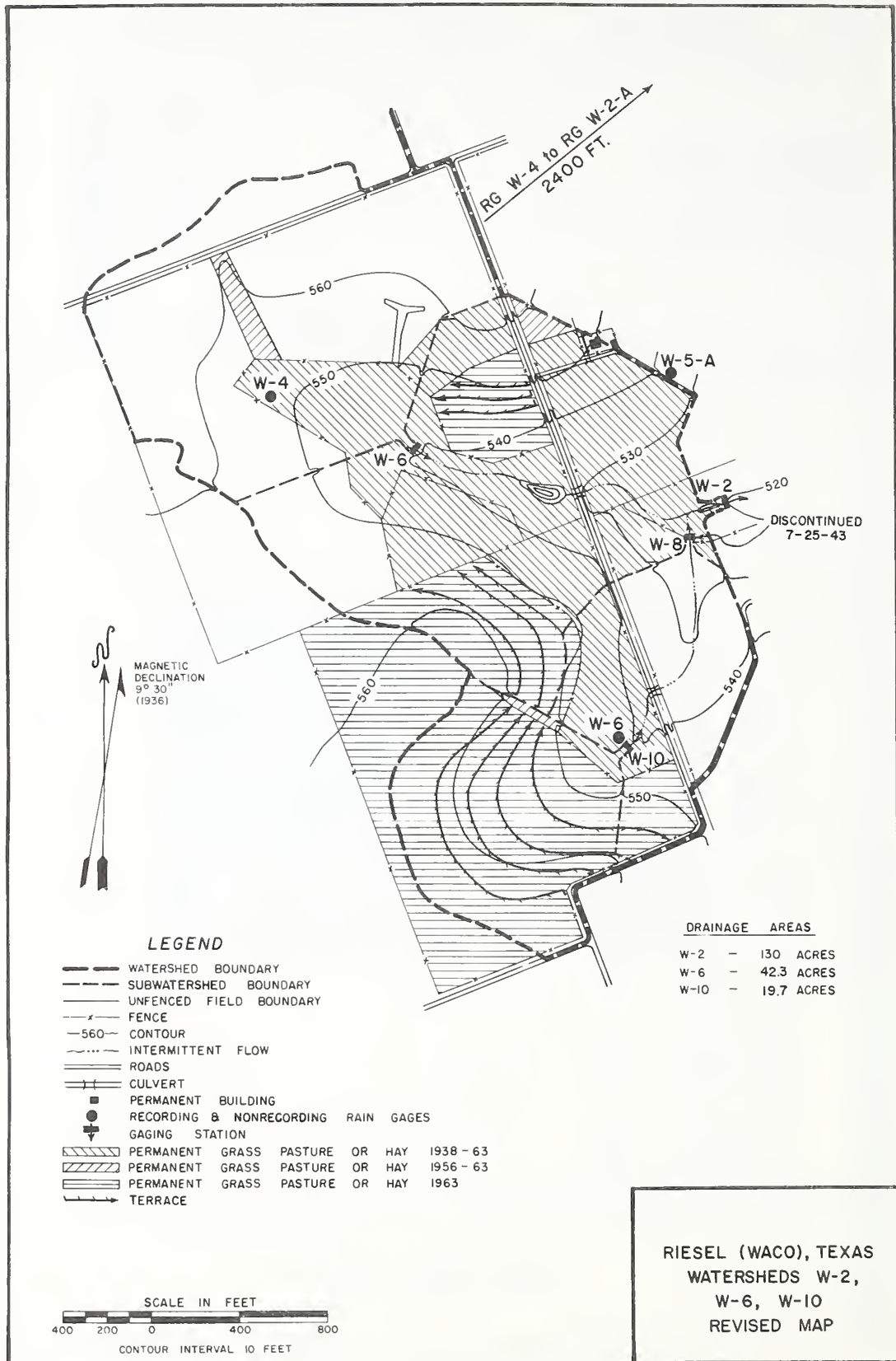
1953 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED W-1		42.06	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Watershed conditions: Straight row cultivation. No terraces or contour rows. 56% of area rebedded for cotton first week of March (bare); 9% corn, planted first week of March; 11% fall-seeded oats; 15% Bermudagrass pasture; 3% native grass meadow; 3% fall-seeded oats-clover; 3% farmsteads and gravel roads.			Event of March 12-16, 1953-- Continued				3-12	0250	•0329	•5705
								0320	•0233	•5844
								0420	•0129	•6018
								0510	•0088	•6106
								0620	•0053	•6184
								0958	•0023	•6307
								1220	•0014	•6351
								1600	•0006	•6387
								2400	•0003	•6417
			3-13	0930	•0002	•6436				
			3-14	2400		T	•6446			
			3-15	2400		T	•6453			
			3-16	0511	1/	T	•6456			

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 177.47. $\frac{1}{2}$ BEGINNING OF NEXT EVENT.



March 12, 1953

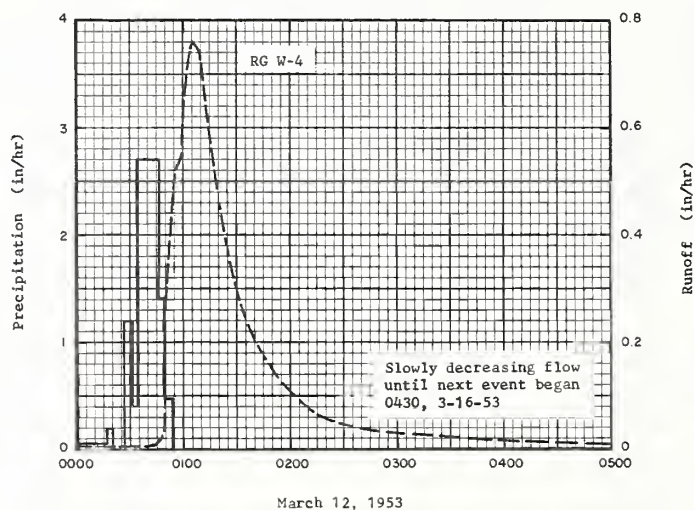
RIESEL (WACO), TEXAS WATERSHED W-1



MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		AREA—130 ACRES		WATERSHED W-2		42.07				
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/	.48	1.37	.96	2.25	1.52	2.50	.13	2.17	.53	1.93	3.28	1.66	18.78			
Q	.07	.04	.02	.11	.01	T	.00	.00	.00	.00	.00	T	.25			
STA AV 2/ P	2.19	2.71	2.34	3.88	4.26	3.53	1.60	1.74	2.23	2.60	2.87	2.64	32.59			
(38-63) Q	.57	.71	.60	.98	1.19	.57	.11	.01	.12	.19	.41	.60	6.06			
MEAN P 3/																
75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-5	.01	4-5	.01	4-5	.01	4-5	.02	4-5	.02	4-5	.03	4-4	.04	4-4	.05
MAXIMUMS FOR PERIOD OF RECORD																
1937 TO 1963 4/	5-1	4.83	5-1	2.86	5-1	5.40	5-1	6.91	5-1	6.97	5-1	7.12	4-30	9.26	4-29	10.96
1944			1944			1944			1944			1944			1944	
NOTES: Watershed land use: 55% pasture; 21% oats-clover; 15% grain sorghum; 5% roads; 4% non-tilled, non-pastured conservation reserve. Cropland farmed on contour, not terraced. Modified conservation applied 1956. 1/ Precipitation data from Thiessen method using rain gages W-2, W-4, W-5A, and W-6. 2/ Precipitation and runoff records began July 1937; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. 4/ No maximums for 1937.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. On the upper slopes, approximately 20 percent of the area, Upland gravel (Uvalde formation) of Tertiary system overlies Pecan Gap. Thickness of gravel 0-1 ft. Depth to marl 1-8 ft. Marl 40-60 ft. thick. Strike of Pecan Gap N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1953 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS				WATERSHED W-2				42.07		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME DF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME DF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 12-16, 1953																
2-10	2 RG 5/		W-4				3-12	0000	.0033	.0000						
2-11	1.24	.0062	3-12	RG	.00	.00		0025	.0031	.0013						
2-12	.26	.0753		0017	.04	.01		0039	.0044	.0022						
2-13	.00	.0028		0020	.20	.02		0045	.0079	.0027						
2-14	.00	.0015		0027	.00	.02		0047	.0148	.0031						
2-15	.20	.0024														
2-16	.00	.0012		0031	1.20	.10		0048	.0284	.0034						
2-17	.00	.0006		0034	.40	.12		0049	.0799	.0043						
2-18	.00	.0007		0046	2.70	.66		0050	.1960	.0067						
2-19	.07	.0014		0049	1.40	.73		0051	.2650	.0105						
2-20	.04	.0019		0054	.48	.77		0053	.3750	.0214						
2-21	.00	.0012		RG	W-6	.75		0055	.4750	.0355						
2-22	.00	.0008		2 RG	AVG 5/	.76		0057	.5210	.0522						
2-23	.00	.0008						0058	.5360	.0674						
2-24	.39	.0028						0059	.5520	.0701						
2-25	.11	.0046						0101	.6410	.0903						
2-26	.03	.0025						0102	.6830	.1014						
2-27	.00	.0018						0103	.7260	.1131						
2-28	.00	.0013						0105	.7600	.1380						
3-01	.00	.0013						0108	.7440	.1758						
3-02	.00	.0011						0110	.7100	.2001						
3-03	.08	.0018						0112	.6580	.2230						
3-04	.00	.0015						0116	.5680	.2638						
3-05	.00	.0007						0120	.4670	.2983						
3-06	.00	.0008						0124	.3950	.3272						
3-07	.00	.0008						0129	.3080	.3563						
3-08	.00	.0013						0135	.2410	.3837						
3-09	.15	.0011						0142	.1920	.4091						
3-10	.91	.0175						0149	.1480	.4288						
3-11	.62	.1412						0159	.1090	.4502						
3-11	5/ .44	.24102						0207	.0844	.4631						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 131.08 (PREVIOUSLY PUBLISHED AS 131.04.) 5/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES W-4 AND W-6. 6/ RAINFALL FOR 3-11 ENDED AT 1813. 7/ RUNOFF FROM 0000 TO 2400.																

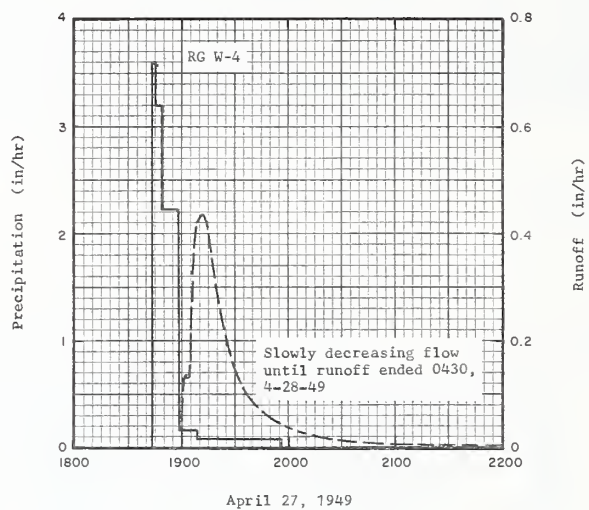
1953 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED W-2		42.07
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF		
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
Watershed conditions: Straight row cultivation. No terraces or contour rows. 27% of area rebedded for cotton first week of March (bare); 22% fall-seeded oats; 14% corn planted first week of March; 22% Bermudagrass pasture; 4% bedded for sudan; 9% native grass meadow; 2% gravel roads.			Event of March 12-16, 1953 —Continued				3-12	0220	.0583
								0232	.0443
								0255	.0320
								0325	.0221
								0400	.0148
								0450	.0092
								0555	.0061
								0720	.0040
								0945	.0024
								1200	.0016
								1425	.0010
								1740	.0006
								2400	.0004
							3-13	1700	.0002
								2400	.0002
								3-14	.0002
								3-15	.0001
								3-16	1/.0001

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 131.08. 1/ BEGINNING OF NEXT EVENT.



RIESEL (WACO), TEXAS WATERSHED W-2

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED W-6		42.08						
						AREA—42.3 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/	.48	1.33	.96	2.30	1.51	2.44	.10	2.35	.53	1.82	3.20	1.58	18.60			
Q	.00	.00	.00	T	.00	.00	.00	.00	.00	.00	.00	.00	T			
STA AV 2/ P	1.98	2.62	2.14	3.94	3.91	3.78	1.50	1.77	2.33	2.82	2.90	2.46	32.15			
(40-63) Q	.32	.39	.30	.67	.76	.50	.07	T	.12	.14	.34	.40	4.01			
MEAN P 3/	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93			
75 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1963 4/	6-10 1941	3.99	4-19 1957	2.33	4-19 1957	2.78	5-11 1957	3.13	5-11 1957	3.21	5-11 1957	3.23	11-22 1940	5.09	4-19 1957	9.06
Notes: Watershed land use: 41% oats-clover; 25% grain sorghum; 16% pasture; 7% gravel roads; 2% native grass meadow; 9% non-tilled, conservation reserve. Modified conservation program since 1956. Row crop planted on contour, no terraces. 1/ Precipitation data obtained from rain gages W-2, W-4, and W-5A. 2/ Precipitation and runoff records began May 1939; station not in operation July 1943 to Jan. 1, 1946; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U.S. Weather Bureau record period at Waco, Tex. 4/ Maximums for 1939 occurred after May 1, and for 1943 before July; no maximums for 1944 and 1945.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Depth to marl - 3 ft. to 8 ft.; thickness 40-50 ft. Strike of Pecan Gap N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1949 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED W-6		42.08						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 27-28, 1949																
4-01	RG W-4 .26	.0000	4-27	RG W-4 1843	.00	.00	4-27	1847	.0000	.0000						
4-02	.03	.0000		1845	3.60	.12		1900	.0007	T						
4-04	.13	.0000		1848	3.20	.28		1902	.1350	.0026						
4-09	.46	.0000		1858	2.22	.65		1903	.1310	.0048						
4-10	.02	.0000						1904	.1420	.0070						
4-19	.70	.0000		1908	1.26	.86		1907	.3890	.0199						
4-20	.44	.0000		1924	.15	.90		1908	.4220	.0267						
4-21	.02	.0000		1956	.08	.94		1911	.4280	.0482						
4-24	.19	.0000						1914	.4130	.0695						
4-25	.54	.0000						1917	.3520	.0886						
Watershed conditions: Straight row cultivation. 58% of area in cotton, planted 3rd week in April; 5% corn, cultivated mid-April; 19% fall-seeded oats, in dough stage; 14% Bermudagrass pasture; 2% native grass meadow; 2% gravel roads.																
								1919	.3070	.0996						
								1922	.2650	.1139						
								1926	.1930	.1292						
								1930	.1470	.1405						
								1936	.1000	.1529						
								1945	.0708	.1655						
								1950	.0560	.1708						
								2000	.0356	.1783						
								2012	.0221	.1839						
								2025	.0140	.1877						
								2049	.0073	.1919						
								2108	.0043	.1937						
								2136	.0023	.1952						
								2223	.0011	.1965						
								2305	.0007	.1971						
								2400	.0003	.1975						
								4-28 0430	.0000	.1980						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 42.65 (PREVIOUSLY PUBLISHED 42.64.) FOR MAP OF WATERSHED, SEE PAGE 42.7-3.																



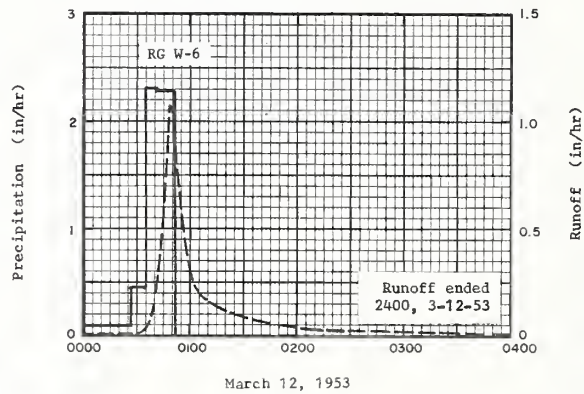
RIESEL (WACO), TEXAS

WATERSHED W-6

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED W-10					42.10			
						AREA—19.7 ACRES										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/	.47	1.42	.97	2.06	1.47	2.54	.12	2.00	.51	2.08	3.38	1.77	18.79		
	Q	.00	.00	.00	T	.00	.00	.00	.00	.00	.00	.00	.00	T		
STA AV 2/ P		2.01	2.67	2.00	3.83	3.77	3.70	1.48	1.80	2.24	2.86	2.84	2.45	31.65		
(39-63) Q		.46	.44	.27	.79	.78	.61	.08	.02	.21	.29	.44	.46	4.85		
MEAN P 3/ 75 YR		2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963 4/	6-10 1941	5.01	4-19 1957	2.31	4-19 1957	2.55	5-11 1957	3.00	11-22 1940	3.33E	11-22 1940	3.53E	11-22 1940	4.94E	5-19 1957	8.29
NOTES: Watershed land use: 100% Coastal Bermudagrass pasture. Grass sprigged in March 1963. Poor coverage of grass due to low rainfall. Watershed terraced. 1/ Precipitation data obtained from rain gage W-6. 2/ Precipitation and runoff records began August 1938; station not in operation July 1943 to May 3, 1946; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. 4/ Maximums for 1943 occurred before July, and for 1946 after May 3; no maximums for 1938, 1944, and 1945.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. On the upper slopes, approximately 35 percent of the area, Upland gravel (Uvalde formation) of Tertiary system overlies Pecan Cap. Thickness of gravel 0-1 ft. Thickness of marl 40-50 ft. Depth to marl 2-8 ft. Strike of Pecan Cap N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1953						SELECTED RUNOFF EVENT		RIESEL (WACO), TEXAS		WATERSHED W-10					42.10	
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF									
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	DF U.	RATE (in/hr)	ACC. (inches)						
Event of March 12, 1953																
2-10	RG W-6 1.24	.0422	3-12	RG W-6			3-12	0000	.0014	.0000						
2-11	.18	.0081		0000	.00	.00		0015	.0012	.0003						
2-14	.19	.0000		0027	.09	.04		0029	.0028	.0007						
2-18	.06	.0000		0035	.45	.10		0031	.0059	.0009						
2-19	.04	.0000		0042	2.31	.37		0034	.0145	.0013						
2-23	.40	.0000		0052	2.28	.75		0037	.0392	.0026						
2-24	.11	.0000						0039	.1050	.0049						
2-25	.03	.0000						0042	.2880	.0148						
3-02	.09	.0000						0045	.5450	.0366						
3-08	.13	.0000						0047	.7290	.0579						
3-09	.93	.0000								.0719						
3-10	.60	.1191								.0888						
3-11	5/.47	6/.1371								.1066						
Watershed conditions: Straight row cultivation, no terraces. 26% of area planted to corn first week of March; 49% bare, bedded for cotton mid-February; 25% oats, fall-seeded.										.0052	.9420	.1400				
										.0054	.7440	.1688				
										.0057	.4890	.1997				
										.0100	.3340	.2205				
										.0103	.2340	.2347				
										.0110	.1640	.2576				
										.0118	.1290	.2777				
										.0124	.1120	.2899				
										.0130	.0898	.3001				
										.0137	.0694	.3096				
										.0144	.0550	.3169				
										.0201	.0326	.3295				
										.0225	.0267	.3415				
										.0307	.0173	.3568				
										.0340	.0105	.3643				
										.0430	.0059	.3709				
										.0600	.0028	.3774				
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.86. FOR MAP OF WATERSHED, SEE PAGE 42.7-3. 5/ RAINFALL ON 3-11 ENDED AT 1813. 6/ RUNOFF FROM 0900 TO 2400.																

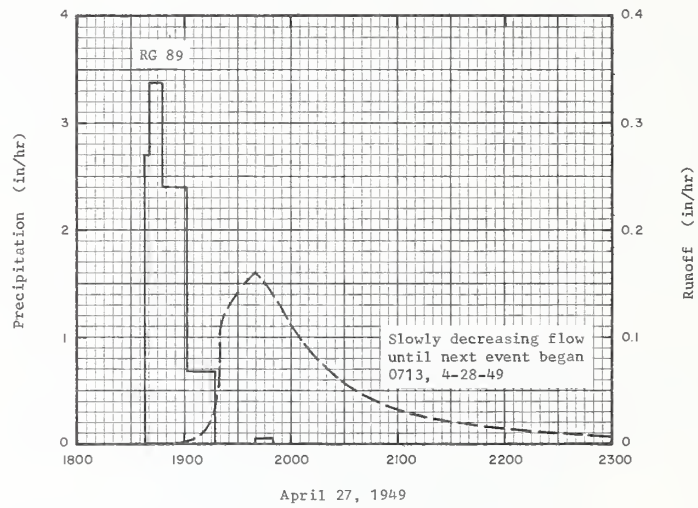
1953			SELECTED RUNOFF EVENT				RIESEL (WACO), TEXAS		WATERSHED W-10		42.10
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
			Event of March 12, 1953—Continued				3-12	0700	.0018	.3797	
								0800	.0010	.3811	
								0930	.0006	.3823	
								1130	.0001	.3829	
								2400	.0000	.3835	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.86



RIESEL (WACO), TEXAS

WATERSHED W-10

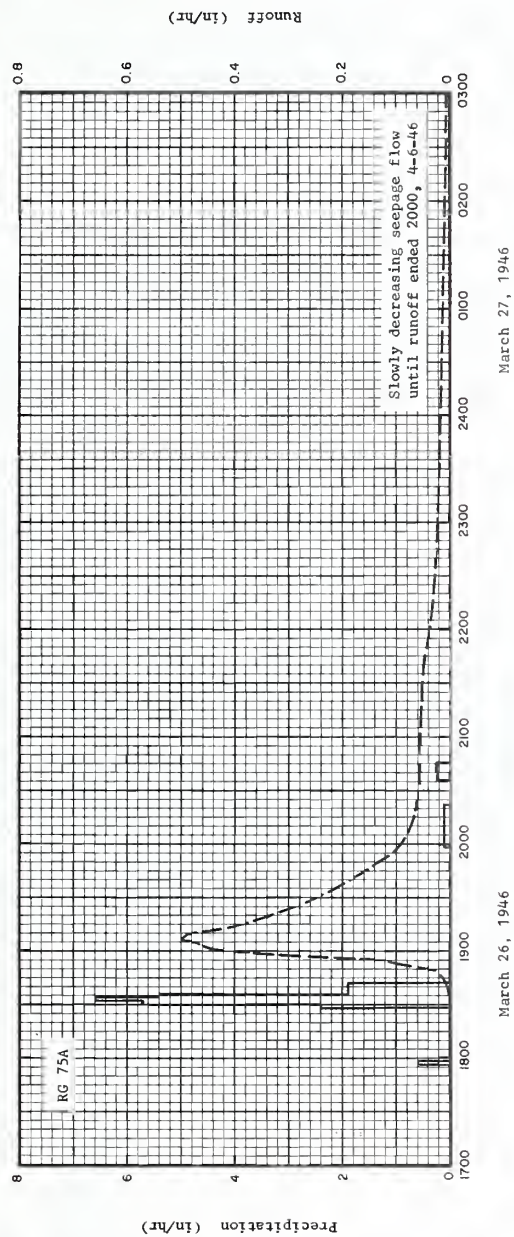


RIESEL (WACO), TEXAS WATERSHED Y

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED Y-2		42.12						
						AREA—132 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P $\frac{1}{2}$	.49	1.30	.89	2.30	1.98	2.87	.17	.99	.47	2.00	3.42	1.74	18.62		
Q	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
STA AV P	2.74	2.65	2.39	3.90	4.44	3.65	1.57	1.69	2.28	2.64	2.93	2.58	32.86			
(39-63) Q	.45	.57	.54	.89	1.10	.53	.08	T	.11	.14	.37	.50	5.28			
MEAN P $\frac{2}{75}$ YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963		.00		.00		.00		.00		.00		.00		.00		.00
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO	5-1	4.07	5-1	3.11	5-1	5.47	5-1	7.08	5-1	7.28	5-1	7.46	4-30	9.64	4-29	10.60
1963	1944		1944		1944		1944		1944		1944		1944		1944	
NOTES:																
Watershed land use: 33% pasture; 29% grain sorghum; 19% cotton; 18% oats-clover; 1% roads. Cropland terraced; contour cultivation; conservation treated since 1942. $\frac{1}{2}$ Precipitation data from Thiessen method using rain gages 69, 69B, 70, 75A, and 84A. $\frac{2}{75}$ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Silty marl unit, Wolfe City member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system, 40 ft. thick with 3 ft. to 10 ft. of soil, on the lower 55 percent of the watershed. Silty marl is overlain by the lower chalk unit of Pecan Gap member. Lower chalk, on approximately 22 percent of the area, outcrops on the middle slopes and is 0 ft. to 25 ft. thick. On the upper slopes, approximately 20 percent of the area, the chalk is overlain by the lower highly calcareous marl unit of the Pecan Gap, with thickness 0 ft. to 30 ft. Depth to calcareous marl 3 ft. to 10 ft. At the top of the watershed, 3 percent of the area, lower highly calcareous marl is overlain by Upland gravel (Uvalde formation) 0 ft. to 1 ft. thick. The strike is N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1946 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED Y-2		42.12						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 26 - April 6, 1946																
2-24	2 RG $\frac{3}{4}$	0.0033	RG		75A		3-26	1600	0.0003	0.0000						
2-25	.00	0.0036	1756		.00	.00		1835	0.0003	0.0007						
2-26	.00	0.0036	1758		.60	.02		1838	0.0014	0.0008						
2-27	.00	0.0029	1828		.00	.02		1841	0.0048	0.0009						
2-28	.00	0.0020	1830		2.40	.10		1844	0.0086	0.0012						
3-01	.00	0.0014	1832		5.70	.29		1847	0.0179	0.0019						
3-02	.00	0.0010	1834		6.60	.51		1850	0.0341	0.0031						
3-03	.00	0.0010	1836		5.40	.69		1852	0.0834	0.0050						
3-04	.00	0.0011	1842		1.90	.88		1856	0.1350	0.0116						
3-05	.10	0.0018	1958		.00	.88		1858	0.3250	0.0191						
3-06	.01	0.0015	2022		.10	.92		1900	0.4120	0.0439						
3-07	.00	0.0003	2036		.00	.92		1904	0.4770	0.0612						
3-12	.38	0.0007	2046		.24	.96		1906	0.5000	0.0775						
3-13	1.77	0.5722	RG		69	.86		1908	0.4960	0.0941						
3-14	.00	0.0308	2 RG		AVG $\frac{3}{4}$	.91		1912	0.4400	0.1253					
3-15	.00	0.0069						1916	0.3840	0.1528						
3-16	.00	0.0029						1921	0.3250	0.1822						
3-17	.00	0.0020						1933	0.2280	0.2365						
3-18	.00	0.0018						1945	0.1640	0.2755						
3-19	.00	0.0022						2000	0.0894	0.3066						
3-20	.00	0.0031						2020	0.0648	0.3319						
3-21	.00	0.0027						2035	0.0556	0.3467						
3-22	.00	0.0027						2130	0.0513	0.3957						
3-23	.00	0.0031						2200	0.0379	0.4180						
3-24	.00	0.0028						2215	0.0316	0.4267						
3-25	1.02	0.0764						2245	0.0236	0.4404						
3-26	.00	0.0086						2325	0.0167	0.4537						
Watershed conditions:								2400	0.0134	0.4624						
See next page.								0135	0.0075	0.4780						
								0510	0.0037	0.4961						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 133.10 (PREVIOUSLY PUBLISHED 133.06.) FOR MAP OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.11-5 (REPRINTED). $\frac{3}{4}$ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69 AND 75A. $\frac{4}{75}$ RUNOFF PRIOR TO EVENT BEGINNING AT 1600.																

1946 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED Y-2				42.12
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of March 26 - April 6, 1946 - Continued											
Watershed conditions: All crop and terraced with contour cultivation. 26% of area in fall-seeded oats-clover; 26% Bermudagrass pasture; 22% corn planted mid-March; 21% bedded for cotton, beds harrowed mid-March; 2% fall-seeded clover; 1% fall-seeded oats; 1% bedded for grain sorghum, beds cultivated mid-March; 1% gravel roads.							3-27	1020	.0020	.5101	
								1600	.0009	.5185	
								2000	.0005	.5212	
								2400	.0005	.5232	
							3-28	2400	.0003	.5323	
							3-29	2400	.0002	.5374	
							3-30	2400	.0001	.5415	
							3-31	2400	T	.5446	
							4-01	2400	T	.5463	
							4-02	2400	T	.5475	
							4-03	2400	T	.5484	
							4-04	2400	T	.5502	
							4-05	2400	T	.5513	
							4-06	2000	.0000	.5518	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 133.10 (PREVIOUSLY PUBLISHED 133.06.)

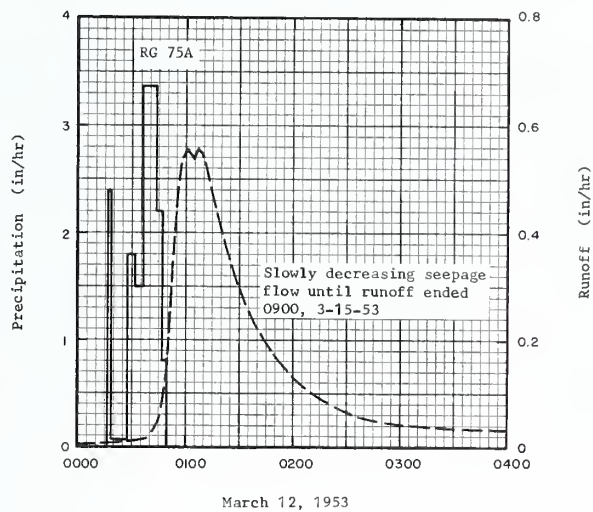


RIESEL (WACO), TEXAS WATERSHED Y-2

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED Y-4		42.13							
						AREA--79.9 ACRES											
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963 P 1/	.50	1.31	.88	2.27	1.94	2.87	.15	.89	.49	2.02	3.41	1.79	18.52				
Q	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
STA AV2/P	2.07	2.60	2.10	3.79	4.09	3.79	1.46	1.65	2.30	2.72	2.89	2.37	31.83				
(39-63) Q	.37	.42	.29	.70	.83	.58	.09	T	.12	.15	.37	.34	4.26				
MEAN P3/ 75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963		.00		.00		.00		.00		.00		.00		.00		.00	
MAXIMUMS FOR PERIOD OF RECORD																	
1939 TO 19634/	6-10 1941	3.12	4-19 1957	2.16	4-19 1957	2.85	4-19 1957	3.25	4-23 1957	3.40	4-23 1957	3.43	4-23 1957	5.12	4-19 1957	9.46	
NOTES:																	
Watershed land use: 31% cotton; 30% oats-clover; 7% grain sorghum; 31% pasture; 1% gravel roads. No changes in conservation practices; cropland contour tilled with terraces. 2/ Precipitation data from Thiessen method using rain gages 69, 69B, 75A, and 84A. 3/ Precipitation and runoff records began Jan. 1, 1939; Station not in operation July 1943 to Jan. 1, 1946; part-year amounts not included in averages. 5/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. 6/ Maximums for 1943 occurred before July; no maximums for 1944 and 1945.																	
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																	
GEOLOGY: Silty marl unit, Wolfe City member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system, 40 ft. thick with 0 ft. to 10 ft. of soil occurs on lower slopes, approximately 85 percent of the area. Silty marl overlain by lower chalk unit of Pecan Gap member. Lower chalk, on approximately 5 percent of the area, outcrops on the middle slopes and is 0 ft. to 25 ft. thick. On the upper slopes, approximately 5 percent of the area, the chalk unit is overlain by the lower highly calcareous marl unit of the Pecan Gap member with thickness from 0 ft. to 15 ft. Depth to calcareous marl is 3 ft. to 10 ft. At the top of the watershed, 5 percent of the area is overlain by Upland gravel (Uvalde formation). Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																	
1953 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED Y-4		42.13							
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
Event of March 12-15, 1953																	
2-10	.84	.0001	3-12	RG	75A		3-12	0000	.0055	.0000							
2-11	.22	.0013		0017	.00	.00		0017	.0050	.0015							
2-14	.21	.0000		0019	2.40	.08		0020	.0062	.0018							
2-18	.09	.0000		0028	.07	.09		0032	.0100	.0032							
2-19	.05	.0000		0032	1.80	.21		0038	.0189	.0047							
2-23	.38	.0000		0036	1.50	.31		0040	.0268	.0053							
2-24	.11	.0000		0044	3.38	.76		0045	.0525	.0086							
2-25	.03	.0000		0047	2.20	.87		0048	.1050	.0128							
3-02	.07	.0000		0050	.80	.91		0050	.2110	.0181							
3-08	.23	T		RG	69	.87		0053	.3520	.0320							
3-09	1.05	.0003		RG	84A	.88		0055	.4480	.0453							
3-10	.64	.1161		3 RG	AVG 5/	.89		0057	.5220	.0614							
3-11	5/ .49	7/ .1148						0059	.5500	.0793							
Watershed conditions: All cropland terraced with contour cultivation. 45% of area bedded, bare; 22% fall-seeded oats-clover; 32% pasture; 1% gravel roads.								0101	.5580	.0977							
								0103	.5450	.1161							
								0105	.5350	.1341							
								0107	.5580	.1523							
								0109	.5520	.1709							
								0112	.5200	.1977							
								0116	.4590	.2302							
								0121	.3900	.2655							
								0128	.3170	.3065							
								0132	.2780	.3263							
								0140	.2230	.3597							
								0150	.1730	.3923							
Continued on next page																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 80.57 (PREVIOUSLY PUBLISHED 80.54.) FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.11-5 (REPRINTED). 5/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69, 75A, AND 84A. 6/ RAINFALL ENDED AT 1817. 7/ RUNOFF FROM 0000 TO 2400.																	

1953			SELECTED RUNOFF EVENT				RIESEL (WACO), TEXAS		WATERSHED Y-4		42.13
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of March 12-15, 1953 - Continued							3-12	0200	.1300	.4175	
								0210	.1030	.4365	
								0220	.0840	.4521	
								0230	.0670	.4646	
								0240	.0525	.4746	
								0300	.0441	.4903	
								0345	.0365	.5213	
								0435	.0268	.5472	
								0645	.0135	.5888	
								1010	.0062	.6208	
								1340	.0033	.6368	
								1710	.0015	.6447	
								2200	.0007	.6498	
							3-13	2400	.0006	.6512	
								1200	.0002	.6560	
								1800	.0001	.6570	
								2400	T	.6575	
							3-14	2400	T	.6578	
							3-15	0900	.0000	.6578	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 80.57 (PREVIOUSLY PUBLISHED 80.54.)

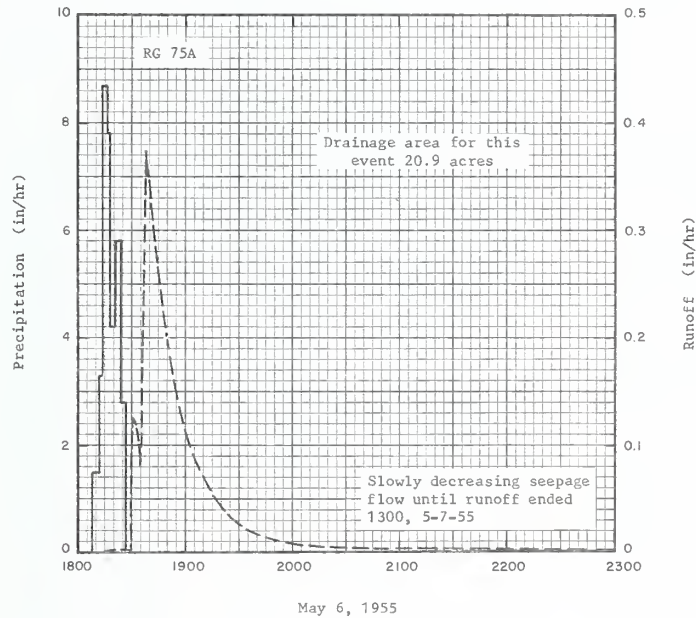


RIESEL (WACO), TEXAS WATERSHED Y-4

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WAGO), TEXAS		WATERSHED Y-6		42.14				
						AREA—16.3 ACRES								
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
YEAR														
1963 P ^{1/}	.50	1.31	.88	2.28	1.94	2.87	.15	.97	.52	1.84	3.39	1.78	18.43	
O	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
STA AV ^{2/} P	1.95	2.70	1.91	3.86	3.82	4.02	1.53	1.65	2.22	2.90	2.86	2.33	31.75	
(39-63) Q	.29	.35	.15	.68	.64	.60	.10	T	.12	.28	.40	.34	3.95	
MEAN P ^{3/}	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93	
75 YR														
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS														
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL											
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963		.00		.00		.00		.00		.00		.00		.00
MAXIMUMS FOR PERIOD OF RECORD														
1939 to 1963 ^{4/}	6-10 1941	3.79	6-10 1941	1.51	4-19 1957	1.99	4-23 1957	2.65	5-11 1957	2.87	5-11 1957	2.90	11-22 1940	4.87
													4-19 1957	8.49
NOTES: Watershed land use: 93% oats-clover; 5% pasture (grassed terrace outlet); 2% gravel roads. No change in conservation practices; cropland contour tilled with terraces. ^{1/} Precipitation data from Thiessen method using rain gages 69B and 75A. ^{2/} Precipitation and runoff records began Jan. 1939; station not in operation July 1943 to May 1, 1947; part-year amounts not included in averages. ^{3/} Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. ^{4/} Maximums for 1943 occurred before July; no maximums 1944 through 1947.														
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).														
GEOLOGY: Silty marl unit, Wolfe City member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system on lower slope, approximately 15 percent of the area. Depth to silty marl 3 ft. to 10 ft.; thickness 40 ft. Silty marl overlain by lower chalk unit; Pecan Gap member of Taylor marl. Lower chalk outcrops on middle slopes of the watershed, approximately 10 percent of the area, soil 0 ft. to 5 ft. thick, chalk 0 ft. to 25 ft. thick. Lower highly calcareous marl unit of Pecan Gap overlies the lower chalk on the upper slopes, 72 percent of the area. Depth to marl 3 ft. to 8 ft.; thickness of marl 15 ft. Upland gravel (Uvalde formation) cap on about 3 percent of area. All formations have a N 20° E strike, and dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.														
1955 SELECTED RUNOFF EVENT						RIESEL (WAGO), TEXAS		WATERSHED Y-6		42.14				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)				
4-08	2 RG 5/	.0000	Event of May 6-7, 1955 6/				5-06	1815	.0000	.0000				
4-09	.04	.0720	5-06	RG	75A	.00	1821	.0012	.0001					
4-10	2.21	.0604		1808	1.50	.10	1829	.0003	.0002					
4-11	.15	T		1812	3.30	.21	1830	.0263	.0004					
4-12	.00	.0000		1816	8.70	.50	1831	.1260	.0017					
4-20	.25	.0000		1818	7.80	.76	1833	.1090	.0056					
4-28	.03	.0000		1821	4.20	.97	1835	.0802	.0087					
	.02	.0000		1824	5.80	1.26	1836	.1450	.0106					
				1827	2.80	1.40	1837	.2990	.0143					
				RG	69	1.56	1838	.3730	.0199					
Watershed conditions: 27% of area in pasture; 36% fall-seeded oats-clover; 18% grain sorghum cultivated last week of April; 18% cotton cultivated previous week; 1% gravel roads. Cropland terraced, contour tilled.											1840	.3420	.0318	
				2 RG	AVG 5/	1.40	1844	.2730	.0523					
							1848	.2150	.0686					
							1853	.1680	.0846					
							1901	.1090	.1025					
							1906	.0854	.1105					
							1911	.0660	.1169					
							1916	.0498	.1217					
							1921	.0398	.1254					
							1927	.0313	.1294					
							1933	.0218	.1316					
							1944	.0145	.1349					
							1957	.0090	.1374					
							2015	.0052	.1395					
							2026	.0037	.1403					
Continued on next page														
NOTES: TO CONVERT RUNOFF IN IN/HR TO GFS, MULTIPLY BY 21.07. FOR MAP OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISG. PUB. 994, P. 42.11-5 (REPRINTED). ^{5/} THIENSEN WEIGHTED RAINFALL USING RAIN GAGES 69 AND 75A. ^{6/} WATERSHED AREA FOR THIS EVENT IS 20.9 ACRES. AREA CHANGED IN 1956 TO 16.3 ACRES, WITH CONVERSION FACTOR OF 16.44, (PREVIOUSLY PUBLISHED AS 16.43).														

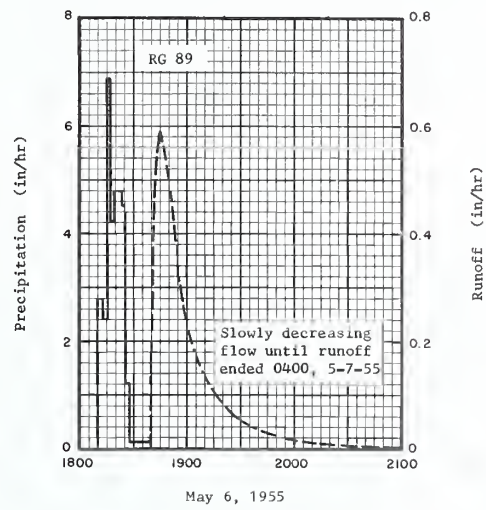
SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED Y-6				42.14
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
			Event of May 6-7, 1955 — Continued				5-06	2040	•0025	•1411	
								2058	•0016	•1417	
								2205	•0005	•1427	
								2400	•0001	•1431	
							5-07	0800	T	•1431	
								1300	•0000	•1431	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 21.07.



RIESEL (WACO), TEXAS WATERSHED Y-6

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED Y-7		42.15						
						AREA—40.0 ACRES										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963 P 1/		.48	1.35	.95	2.38	1.85	2.76	.12	1.47	.48	1.94	3.41	1.65	18.84		
Q		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
STA AV 2/ P		1.98	2.74	1.94	3.93	3.86	3.98	1.52	1.70	2.18	2.95	2.92	2.38	32.08		
(39-63) Q		.28	.41	.25	.78	.84	.66	.08	.02	.18	.25	.46	.43	4.64		
MEAN P 3/																
75 YR		2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963		.00		.00		.00		.00		.00		.00		.00		.00
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1963 4/	6-10 1941	3.59	4-19 1957	2.34	4-19 1957	2.76	4-23 1957	3.28	4-23 1957	3.31	4-23 1957	3.31	11-22 1940	5.37	4-19 1957	8.89
NOTES:																
Watershed land use: 18% corn; 37% oats-clover; 7% grain sorghum; 16% pasture; 22% fallow (clean tilled). Cropland terraced, contour tilled. 1/ Precipitation data from Thiessen method using rain gages 89 and W-2A. 2/ Precipitation and runoff records began Jan. 1939; station not in operation from July 1943 to May 1, 1947; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. 4/ Maximums for 1943 occurred before July; no maximums for 1944 through 1947.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Depth to marl 3 ft. to 8 ft. Thickness of marl 40 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1955 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED Y-7		42.15						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	2 RG 5/		Event of May 6-7, 1955													
4-08	.03	.0000		RG	.89		5-06	1839	.0000	.0000						
4-09	2.14	.3742	5-06	1810	.00	.00		1840	.0005	.0005 T						
4-10	.20	.2013		1813	2.80	.19		1841	.1220	.0010						
4-11	.00	T		1815	2.40	.27		1842	.5160	.0063						
4-12	.19	.0051		1817	6.90	.50		1844	.5750	.0245						
4-20	.05	.0000		1819	4.20	.64		1845	.5900	.0342						
4-28	.02	.0000		1824	4.80	1.04		1847	.5630	.0535						
Watershed conditions: Land use data for 1955 not available, except all pasture which is on government-owned land. Land use shown is for 1957; no major change from 1955 to 1957. 29% corn, planted mid-March; 50% cotton, planted late April; 8% pasture; 10% fall-seeded oats; 3% grain sorghum planted early in April.				1826	4.50	1.19		1850	.4910	.0797						
				1828	1.20	1.23		1852	.4310	.0951						
				1840	.10	1.25		1854	.3790	.1086						
				RG	W-2A	1.20		1856	.3220	.1204						
				2 RG	AVG 5/	1.24		1900	.2380	.1390						
								1905	.1790	.1563						
								1909	.1420	.1669						
								1915	.1130	.1797						
								1920	.0888	.1881						
								1925	.0707	.1947						
								1930	.0555	.2000						
								1935	.0434	.2041						
					1945	.0263	.2099									
					1955	.0171	.2135									
					2005	.0108	.2157									
					2018	.0052	.2175									
					2039	.0021	.2186									
					2059	.0009	.2191									
					2132	.0002	.2194									
					2400	T	.2196									
					5-07	0400	.0000	.2196								
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 40.33 (PREVIOUSLY PUBLISHED 40.32.) FOR MAP OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.11-5 (REPRINTED). 5/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 89 AND W-2A.																

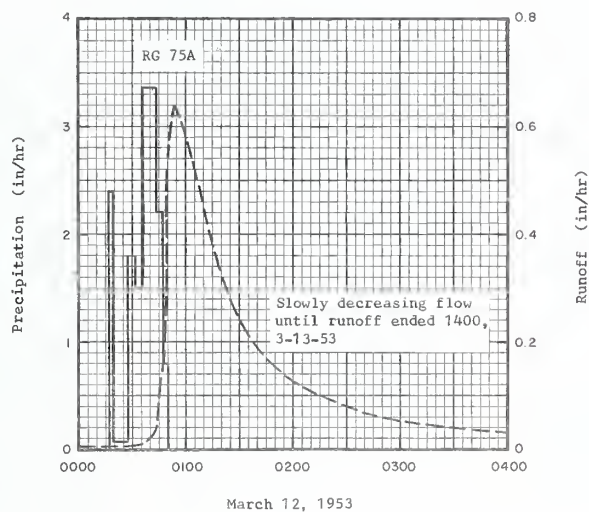


RIESEL (WACO), TEXAS WATERSHED Y-7

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED Y-8		42.16						
						AREA—20.8 ACRES										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/2	.49	1.29	.94	2.40	1.99	2.89	.15	1.21	.49	1.87	3.44	1.64	18.80			
Q	.00	.00	.00	T	.00	.00	.00	.00	.00	.00	.00	.00	T			
STA AV 2/P	1.82	2.71	1.99	3.94	3.69	4.22	1.61	1.64	2.31	3.07	2.96	2.42	32.38			
(40-63) Q	.32	.41	.20	.76	.68	.60	.08	T	.15	.17	.46	.39	4.22			
MEAN P 3/75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1963 4/	6-10 1941	3.29	4-19 1957	2.41	4-19 1957	2.80	4-23 1957	3.32	4-23 1957	3.37	4-23 1957	3.37	11-22 1940	5.64	4-19 1957	9.10
NOTES:																
Watershed land use: 95% grain sorghum; 3% pasture (grassed terrace outlet); 2% gravel roads. No change in conservation practices; cropland contour tilled with terraces. 1/2 Precipitation data obtained from rain gage 75A. 2/ Precipitation and runoff records began Mar. 1, 1939; station not in operation July 1943 to Jan. 1, 1949; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. 4/ Maximums for 1939 occurred after Mar. 1; maximums for 1943 occurred before July; no maximums 1944 through 1948.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Lower chalk unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system outcrops on lower 5 percent of the area and is 0 ft. to 25 ft. thick. Lower chalk overlain by lower highly calcareous marl unit of the Pecan Gap on 95 percent of the area. Marl unit is 0 ft. to 30 ft. thick. Depth to marl 3 ft. to 10 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1953 SELECTED RUNOFF EVENT				RIESEL (WACO), TEXAS				WATERSHED Y-8				42.16				
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 12-13, 1953																
2-10	RG 75A 1.05	.0001	3-12	RG	75A		3-12	0000	.0040	.0000						
2-11	.21	.0035		0017	.00	.00		0018	.0040	.0012						
2-14	.20	.0000		0019	2.40	.08		0028	.0048	.0020						
2-18	.06	.0000		0028	.07	.09		0037	.0101	.0030						
2-19	.04	.0000		0032	1.80	.21		0041	.0257	.0040						
2-23	.36	.0000		0036	1.50	.31		0043	.0529	.0053						
2-24	.11	.0000		0044	3.38	.76		0045	.1070	.0079						
2-25	.03	.0000		0047	2.20	.87		0048	.2880	.0175						
3-02	.08	.0000		0050	.80	.91		0050	.5240	.0310						
3-08	.21	.0000						0051	.5820	.0402						
3-09	1.03	.0004						0052	.6100	.0501						
3-10	.66	.0907						0054	.6390	.0710						
3-11	5/.51	2.0825						0058	.6100	.1126						
Watershed conditions: All cropland terraced with contour cultivation. 51% of area bedded, no crop; 21% fescue and clover; 23% fall-seeded oats-clover; 3% pasture (grassed terrace outlet); 2% gravel roads.								0104	.5390	.1704						
								0111	.4250	.2261						
								0118	.3390	.2699						
								0127	.2610	.3145						
								0132	.2350	.3351						
								0142	.1850	.3704						
								0149	.1530	.3901						
								0200	.1280	.4158						
								0208	.1140	.4320						
								0220	.0949	.4529						
								0231	.0782	.4687						
								0245	.0620	.4851						
								0300	.0529	.4994						
								0315	.0449	.5117						
								0330	.0377	.5220						
								0355	.0313	.5364						
								0415	.0257	.5459						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 20.97. FOR MAP OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.11-5 (REPRINTED). 5/ RAINFALL DATA OBTAINED FROM RAIN GAGE 75A. 6/ RAINFALL ENDED AT 1817. 7/ RUNOFF FROM 0000 TO 2400.																

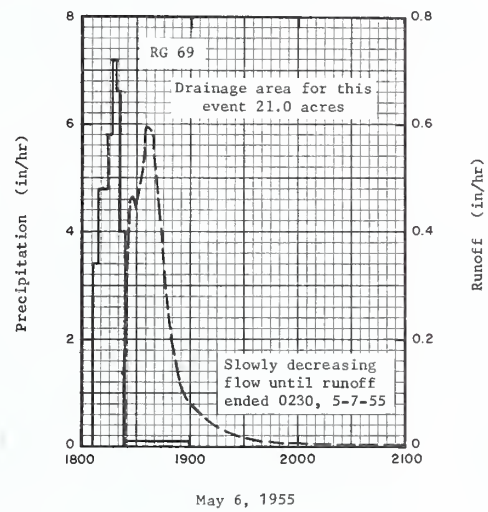
1953 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED Y-8				42.16
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF				
DATE MO-OAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-OAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-OAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of March 12-13, 1953 - Continued											
							3-12	0440	.0208	.5556	
								0515	.0166	.5665	
								0600	.0131	.5776	
								0650	.0101	.5873	
								0800	.0076	.5976	
								0930	.0056	.6075	
								1120	.0040	.6163	
								1250	.0027	.6214	
								1430	.0017	.6251	
								1630	.0010	.6278	
							3-13	1900	.0005	.6295	
								2400	.0002	.6313	
								0300	.0001	.6319	
								1400	.0000	.6327	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 20.97.



RIESEL (WACO), TEXAS WATERSHED Y-8

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS AREA—18.6 ACRES										WATERSHED Y-10 42.17	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963 P ^{1/}	.51	1.31	.87	2.24	1.94	2.87	.15	.84	.49	2.01	3.22	1.82	18.27				
Q	.00	.00	.00	T	.00	.00	.00	.00	.00	.00	.00	.00	T				
STA AV ^{2/} P	2.04	2.58	1.98	3.85	3.85	3.88	1.47	1.65	2.22	2.77	2.80	2.36	31.45				
(39-63) Q	.37	.36	.24	.81	.75	.62	.10	.01	.21	.22	.36	.37	4.42				
MEAN P ^{3/} 75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	4-5	T	
MAXIMUMS FOR PERIOD OF RECORD																	
1938 TO 1963 ^{4/}	4-19 1957	3.73	4-19 1957	2.90	4-19 1957	3.48	4-19 1957	3.62	4-19 1957	3.86	4-19 1957	3.91	4-23 1957	5.34	4-19 1957	10.57	
NOTES:																	
Watershed land use: 93% cotton; 4% pasture (grassed terrace outlet); 3% gravel roads. No change in conservation practices; cropland contour tilled with terraces. ^{2/} Precipitation data from Thiessen method using rain gages 69 and 69B. ^{3/} Precipitation and runoff records began July 1, 1938; station not in operation July 1943 to May 1, 1946; part-year amounts not included in averages. ^{4/} Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. ^{5/} Maximums for 1943 occurred before July; maximums for 1946 occurred after May 1; no maximums 1938, 1944, and 1945.																	
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																	
GEOLOGY: Silty marl unit, Wolfe City member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Thickness of marl 40 ft. Depth to marl 3 ft. to 10 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																	
1955 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS				WATERSHED Y-10				42.17			
ANTECEDENT CONDITIONS			RAINFALL					RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
4-08	2 RG ^{5/} 0.02	.0000	Event of May 6-7, 1955 ^{6/}				5-06	1823	.0000	.0000							
4-09	2.18	.3672	5-06	RG	.69	.00	1824	.0009	.0009	T							
4-10	.15	.0864		1806	.00	.00	1825	.2090	.0018								
4-12	.14	.0000		1809	3.40	.17	1826	.3650	.0065								
4-20	.01	.0000		1814	4.80	.57	1827	.4230	.0134								
4-28	.01	.0000		1817	5.80	.86											
Watershed conditions: Crop-land terraced, contour tilled. 30% of area in cotton, planted last week of April; 28% fall-seeded oats-clover; 27% grain sorghum cultivated previous week; 13% pasture; 2% gravel roads.				1819	7.20	1.10	1828	.4660	.0210								
				1821	6.60	1.32	1830	.4400	.0361								
				1824	4.00	1.52	1830	.4400	.0361								
				1900	.07	1.56	1834	.5340	.0682								
				RG	75A	1.40	1835	.5950	.0776								
				2 RG	AVG ^{5/}	1.55	1838	.5900	.1073								
							1840	.5340	.1260								
							1843	.4270	.1498								
							1845	.3180	.1623								
							1848	.2430	.1762								
							1852	.1600	.1900								
							1857	.0940	.2006								
							1906	.0614	.2121								
							1914	.0374	.2184								
							1921	.0255	.2220								
				1929	.0165	.2247											
				1939	.0100	.2269											
				1950	.0056	.2283											
				2003	.0027	.2292											
				2023	.0009	.2298											
				2038	.0005	.2299											
				2100	.0001	.2301											
				2140	T	.2301											
				2400	T	.2301											
				5-07 0230	.0000	.2301											
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 21.17. FOR MAP OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.11-5 (REPRINTED). ^{5/} THIENSEN WEIGHTED RAINFALL FROM RAIN GAGES 69 AND 75A. ^{6/} WATERSHED AREA FOR THIS EVENT 21.0 ACRES. AREA CHANGED IN 1956 TO 18.6 ACRES, WITH A CONVERSION FACTOR OF 18.75.																	

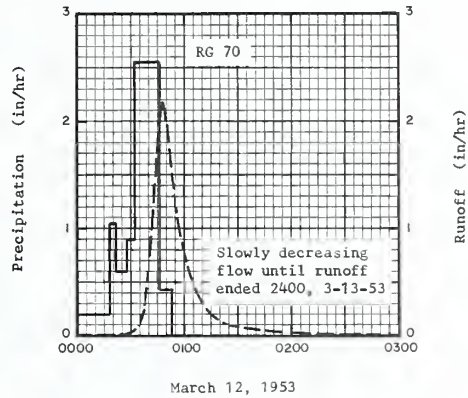


RIESEL (WACO), TEXAS WATERSHED Y-10

MONTHLY PRECIPITATION AND RUNOFF (inches)							RIESEL (WACO), TEXAS				WATERSHED SW-12 42.24					
							AREA — 2.97 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/	.48	1.28	.86	2.28	2.13	2.93	.21	.83	.32	2.20	3.62	1.79	18.93		
	Q	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
	STA AV2/P	2.03	2.64	1.93	3.86	3.80	3.99	1.51	1.59	2.20	2.77	2.77	2.31	31.40		
	(38-63) Q	.40	.47	.14	.50	.41	.30	T	T	.05	.01	.19	.30	2.77		
	MEAN P2/															
	75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963		.00		.00		.00		.00		.00		.00		.00		.00
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963	6-10 1941	3.48	4-19 1957	2.42	4-19 1957	2.76E	4-23 1957	3.29E	4-23 1957	3.34E	4-23 1957	3.34	4-23 1957	4.61E	4-19 1957	8.53E
NOTES: Watershed land use: 100% native grass meadow mowed annually for hay. 1/ Precipitation data obtained from rain gage 70. 2/ Precipitation and runoff records began Jan. 1, 1938; station not in operation July 1943 to June 1, 1947; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. 4/ Maximums for 1943 occurred before July; no maximums for 1944 through 1947.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Silty marl unit, Wolfe City member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system, Marl 40 ft. thick. Depth to marl 4 ft. to 8 ft. Strike N 20° E; dip SE 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1953 SELECTED RUNOFF EVENT							RIESEL (WACO), TEXAS				WATERSHED SW-12				42.24	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 12-13, 1953																
2-10	RG 70	.0000	3-12	RG	70		3-12	0000	.0013	.0000						
2-11	.22	.0000		0000	.00	.00		0014	.0013	.0003						
2-14	.21	.0000		0018	.20	.06		0018	.0023	.0004						
2-18	.10	.0000		0022	1.05	.13		0025	.0157	.0013						
2-19	.05	.0000		0028	.60	.19		0030	.0377	.0034						
2-23	.42	.0000		0032	.90	.28		0033	.0734	.0062						
2-24	.08	.0000		0046	2.56	.88		0035	.1340	.0097						
2-25	.04	.0000		0053	.43	.93		0037	.2780	.0166						
3-02	.08	.0000		0712	.00	.93		0039	.5100	.0296						
3-08	.24	.0000		1122	T	.95		0041	.9340	.0531						
3-09	1.06	.0067						0043	1.3700	.0913						
3-10	.64	.0344						0045	1.8400	.1442						
3-11	5/.47	6.1180						0047	2.1400	.2111						
Watershed conditions: 100% of area in native grass meadow.																
								0048	2.1700	.2471						
								0049	2.0800	.2826						
								0051	1.8400	.3485						
								0054	1.3700	.4286						
								0057	1.0500	.4897						
								0101	.7370	.5483						
								0104	.5240	.5793						
								0108	.3500	.6082						
								0113	.2320	.6328						
								0118	.1540	.6485						
								0126	.1040	.6657						
								0142	.0560	.6859						
								0155	.0377	.6959						
								0212	.0257	.7048						
								0243	.0157	.7152						
								0345	.0077	.7267						
								0445	.0047	.7329						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.995 (PREVIOUSLY PUBLISHED 2.994.) FOR MAP OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.24-4. 5/ RAINFALL ENDED AT 1758. 6/ RUNOFF FROM 0000 TO 2400.																

1953			SELECTED RUNOFF EVENT				RIESEL (WACO), TEXAS				WATERSHED SW-12		42,24
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
			Event of March 12-13, 1953 - Continued										
							3-12	0630	•0023	•7390			
								1115	•0007	•7461			
								1400	•0007	•7480			
								2400	•0003	•7530			
							3-13	1200	T	•7550			
								2400	•0000	•7550			

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.995 (PREVIOUSLY PUBLISHED 2.994.)



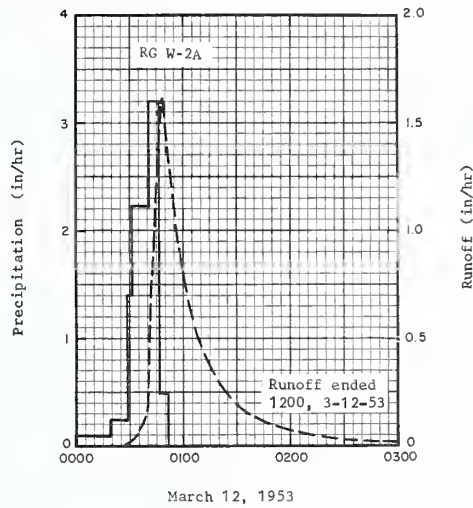
RIESEL (WACO), TEXAS

WATERSHED SW-12

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED SW-17 42.28								
						AREA -- 2.99 ACRES										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/	.49	1.35	.99	2.34	1.69	2.45	.09	1.80	.55	1.97	3.25	1.68	18.65			
Q	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.01			
STA AV2/P	1.88	2.74	1.94	4.03	3.75	3.98	1.62	1.70	2.36	3.09	2.95	2.44	32.48			
(40-63) Q	.37	.57	.32	.93	.70	.78	.13	T	.23	.22	.54	.55	5.34			
MEAN P 3/																
75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-5	.01	4-5	T	4-5	T	4-5	.01	4-5	.01	4-5	.01	4-5	.01	4-5	.01
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1963 4/	10-31	7.06	4-19	2.54	4-19	2.96	4-23	3.31	4-23	3.35	11-22	3.91	11-22	5.37	4-19	9.42
	1940		1957		1957		1957		1957		1940		1940		1957	
NOTES: Watershed land use: 100% Bermudagrass pasture. 1/ Precipitation data obtained from rain gage W-2. 2/ Precipitation and runoff records began Feb. 1, 1939; station not in operation July 1943 to Jan. 1, 1948; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. 4/ Maximums for 1939 occurred after Feb.; maximums for 1943 occurred before July; no maximums 1944 through 1947.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).																
GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Depth to marl 1 ft. to 6 ft. Thickness of marl 20 ft. to 25 ft. Marl overlies lower chalk unit of Pecan Gap. Chalk 15 ft. thick. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
1953 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED SW-17				42.28				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG W-2A		Event of March 12, 1953													
2-10	1.23	.0440		RG	W-2A		3-12	0000	.0003	.0000						
2-11	.25	.0245	3-12	0000	.00	.00		0017	.0003	.0001						
2-14	.20	.0000		0019	.09	.03		0028	.0023	.0004						
2-18	.09	.0000		0029	.24	.07		0030	.0116	.0006						
2-19	.03	.0000		0032	1.40	.14		0033	.0229	.0016						
2-23	.40	.0000		0041	2.22	.47		0037	.0730	.0041						
2-24	.12	.0000		0047	3.20	.79		0038	.1150	.0057						
2-25	.03	.0000		0052	.48	.83		0040	.2480	.0115						
3-02	.09	.0000						0042	.4640	.0232						
3-08	.17	.0000						0044	.8690	.0454						
3-09	1.03	.0000						0046	1.1700	.0789						
3-10	.73	.2133						0047	1.3500	.0998						
3-11	5/.43	6.1829						0048	1.6100	.1245						
								0049	1.6100	.1512						
								0050	1.5300	.1773						
Watershed conditions: 100% of area in Bermudagrass pasture.								0052	1.3800	.2261						
								0055	1.1300	.2890						
								0059	.8690	.3558						
								0103	.6700	.4069						
								0107	.5470	.4473						
								0112	.4440	.4885						
								0118	.3260	.5268						
								0124	.2530	.5556						
								0130	.1940	.5780						
								0140	.1270	.6038						
								0155	.0803	.6298						
								0205	.0640	.6419						
								0214	.0481	.6502						
								0228	.0342	.6595						
								0250	.0229	.6697						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.015 (PREVIOUSLY PUBLISHED 3.014.) FOR MAP OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.28-5. 5/ RAINFALL ENDED AT 1902. 6/ RUNOFF FROM 1623 TO 2400.																

1953 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED SW-17				42.28
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of March 12, 1953 - Continued							3-12	0305	.0179	.6748	
								0335	.0096	.6813	
								0500	.0033	.6897	
								0840	.0003	.6947	
								1200	.0000	.6953	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.015 (PREVIOUSLY PUBLISHED 3.014.)



RIESEL (WACO), TEXAS WATERSHED SW-17

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS						WATERSHED P-1 42.31				
						AREA — 0.243 ACRE										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.47 .00	1.43 .00	.99 .00	2.12 .00	1.84 .00	2.80 .00	.15 .00	1.58 .00	.41 .00	2.01 .00	3.37 .00	1.84 .00	19.01 .00			
STA AV2/P (38-63) Q	2.40 .54	2.92 .57	1.70 .14	3.19 .18	2.96 .27	5.30 .96	1.47 .04	1.43 .00	2.22 .15	2.94 .01	3.48 .51	3.07 .42	33.78 3.75			
MEAN P2/ 75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963		.00		.00		.00		.00		.00		.00		.00		.00
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963 1/4	6-10 1941	7.18	11-22 1940	2.04	11-22 1940	2.20	11-22 1940	2.30	11-22 1940	2.33	11-22 1940	2.66	11-22 1940	4.23	11-22 1940	4.39
NOTES: Watershed land use: 100% bermudagrass and buffalograss pasture, heavily grazed. 1/ Precipitation data obtained from rain gage W-9. 2/ Precipitation and runoff records began Jan. 1, 1938; station not in operation July 1943 to Jan. 1, 1960; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. 4/ Maximums for 1943 occurred before July; no maximums 1944 through 1959.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to <u>Texas Blackland Prairie</u> land resource area (J-86).																
GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Depth to marl 5 ft. to 8 ft. Thickness of marl 60 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
NO SUITABLE 1963 SELECTED RUNOFF EVENT TO REPORT. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.31-4.																
Cooperative Research Project of USDA and Texas Agricultural Experiment Station 42.31-1																

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS						WATERSHED P-2 42.32				
						AREA — 0.243 ACRE										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.47 .00	1.43 .00	.99 .00	2.12 .00	1.84 .00	2.80 .00	.15 .00	1.58 .00	.41 .00	2.01 .00	3.37 .00	1.84 .00	19.01 .00			
STA AV2/P (38-63) Q	2.21 .65	2.90 .72	1.76 .22	3.41 .25	2.71 .23	5.67 1.37	1.60 .11	1.27 .00	2.46 .28	3.04 .06	3.61 .86	3.30 .71	33.94 5.46			
MEAN P2/ 75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963		.00		.00		.00		.00		.00		.00		.00		.00
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963 1/4	6-10 1941	6.65	6-10 1940	2.09	6-10 1941	2.14	11-22 1940	2.34	11-22 1940	2.45	11-22 1940	3.04	11-22 1940	5.36	11-22 1940	5.83
NOTES: Watershed land use: 100% bermudagrass and buffalograss pasture, heavily grazed. 1/ Precipitation data obtained from rain gage W-9. 2/ Precipitation and runoff records began Jan. 1, 1938; runoff record lost May 16-20, 1939, which was only runoff that year; station not in operation July 1943 to Jan. 1, 1960; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Tex. 4/ Maximums for 1943 occurred before July; no maximums for 1939 and 1944 through 1959.																
GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to <u>Texas Blackland Prairie</u> land resource area (J-86).																
GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Depth to marl 5 ft. to 8 ft. Thickness of marl 60 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.																
NO SUITABLE 1963 SELECTED RUNOFF EVENT TO REPORT. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.31-4.																

MONTHLY PRECIPITATION AND RUNOFF (inches)							RIESEL (WACO), TEXAS AREA — 0.243 ACRE WATERSHED P-3 42.33							
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 P 1/ Q	.47 .00	1.43 .00	.99 .00	2.12 .00	1.84 .00	2.80 .00	.15 .00	1.58 .00	.41 .00	2.01 .00	3.37 .00	1.84 .00	19.01 .00	
STA AV2/P (38-63) Q	2.40 .62	2.92 .66	1.70 .20	3.19 .25	2.96 .39	5.30 1.22	1.47 .09	1.43 .00	2.22 .23	2.94 .12	3.48 .68	3.07 .56	33.08 5.02	
MEAN P3/ 75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963		.00		.00		.00		.00		.00		.00		.00		.00

MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963	6-10 1941	7.63	6-10 1941	2.13	6-10 1941	2.23	11-22 1940	2.32	11-22 1940	2.46	11-22 1940	3.02	11-22 1940	5.34	11-22 1940	5.93

NOTES: Watershed land use: 100% bermudagrass and buffalograss pasture, lightly grazed. 1/ Precipitation data obtained from rain gage W-9. 2/ Precipitation and runoff records began Jan. 1, 1938; station not in operation July 1943 to Jan. 1, 1960; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Texas. 4/ Maximums for 1943 occurred before July; no maximums 1944 through 1959.

GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).

GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Depth to marl, 5 ft. to 8 ft.; thickness of marl 60 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.

NO SUITABLE 1963 SELECTED RUNOFF EVENT TO REPORT. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.31-4.

Cooperative Research Project of USDA and Texas Agricultural Experiment Station
42.33-1

MONTHLY PRECIPITATION AND RUNOFF (inches)							RIESEL (WACO), TEXAS AREA — 0.243 ACRE WATERSHED P-4 42.34							
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 P 1/ Q	.47 .00	1.43 .00	.99 .00	2.12 .00	1.84 .00	2.80 .00	.15 .00	1.58 .00	.41 .00	2.01 .00	3.37 .00	1.84 .00	19.01 .00	
STA AV2/P (38-63) Q	2.40 .71	2.92 .72	1.70 .20	3.19 .20	2.96 .25	5.30 1.22	1.47 .09	1.43 .00	2.22 .21	2.94 .05	3.48 .81	3.07 .81	33.08 5.27	
MEAN P3/ 75 YR	2.15	2.38	2.77	4.16	4.55	3.30	2.06	1.94	2.83	2.64	2.52	2.63	33.93	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963		.00		.00		.00		.00		.00		.00		.00		.00

MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1963	6-10 1941	7.79	11-22 1940	2.15	11-22 1940	2.25	11-22 1940	2.51	11-22 1940	2.65	11-22 1940	3.01	11-22 1940	5.69	11-22 1940	6.26

NOTES: Watershed land use: 100% bermudagrass and buffalograss pasture, lightly grazed. 1/ Precipitation data obtained from rain gage W-9. 2/ Precipitation and runoff records began Jan. 1, 1938; station not in operation July 1943 to Jan. 1, 1960; part-year amounts not included in averages. 3/ Mean P based on 75-yr (1889-1963) U. S. Weather Bureau record period at Waco, Texas. 4/ Maximums for 1943 occurred before July; no maximums 1944 through 1959.

GENERALLY REPRESENTS: (Revision) Blacklands of Coastal Plain in Texas problem area changed to Texas Blackland Prairie land resource area (J-86).

GEOLOGY: Lower highly calcareous marl unit, Pecan Gap member, Taylor marl formation, Upper Cretaceous (Gulf) series, Cretaceous system. Depth to marl 5 ft. to 8 ft. Thickness of marl 60 ft. Strike N 20° E; dip SE, 80 ft. per mile. Source of data: "Geology of the Blacklands Experimental Watershed, near Waco, Texas," Bureau of Economic Geology Report of Investigations No. 12, University of Texas, Austin, Texas, March 1952.

NO SUITABLE 1963 SELECTED RUNOFF EVENT TO REPORT. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.31-4.

Cooperative Research Project of USDA and Texas Agricultural Experiment Station
(See 42.33-1 above)
42.34-1

1963 DAILY PRECIPITATION (inches)						HASTINGS, NEBRASKA WATERSHED W-3 44.1						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.00	.00	1.86	.00	.00	.00
2	.00	.00	.09	.12	.00	.32	.00	.00	.00	.00	.00	.00
3	.00	.00	.14	.00	.00	.00	.00	.00	.04	.00	.00	.00
4	.22	.00	.02	.00	.00	.38	.00	.04	.45	.00	.00	.00
5	.03	.00	.08	.00	.08	.00	.31	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.75	.12	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.28	.00	.00	.00	.00	2.12	.00	.00	.00
10	.02	.00	.40	.00	.00	.00	.16	.00	1.06	.00	.00	.00
11	.02	.00	.07	.00	.00	.46	.00	.14	.00	.00	.00	.08
12	.00	.00	.38	.00	.00	.00	.14	.44	.05	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.88	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.16	.35	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.23	.14	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.28	.05	.00
18	.03	.00	.34	.00	.00	.74	.00	.84	.00	.00	.00	.00
19	T	.00	.00	.00	.10	.01	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.97	.12	.00	.00
21	.00	.00	.00	.00	.00	.00	.07	.00	1.54	.00	.25	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.84	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.24	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00
25	.00	.00	.00	.00	.00	1.60	.20	.00	.00	.00	.00	.00
26	.00	.00	.00	.70	.22	.69	.12	.05	.00	.00	.00	.00
27	.00	.00	.00	.35	.00	.00	.27	.00	.00	.13	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05
29	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00
30	.00	-----	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	-----	.00	-----	.15	-----	.00	.00	-----	.00	-----	.00
TOTAL	.32	.00	1.52	1.45	.71	4.61	2.45	2.64	9.12	1.53	.30	.13
STAAV	.35	.54	1.26	1.95	3.82	4.87	3.15	2.77	2.68	1.23	.64	.39

NOTES: Daily precipitation is based on Meteorological Station records from 1943 to 1963.

1963 SELECTED RUNOFF EVENT			HASTINGS, NEBRASKA				WATERSHED W-3		44.1	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 9, 1963										
	4 RG 1/		9-9	RG	B-36-R		9-9	1516	.0001	.0000
8-11	.10	.00		1515	.00	.00		1524	.0047	.0003
8-12	.44	.00		1517	1.50	.05		1530	.0177	.0014
8-17	.09	.00		1521	2.40	.21		1533	.0612	.0034
8-18	.75	.00		1524	3.00	.36		1540	.1730	.0171
8-23	.13	.00		1527	1.00	.41		1550	.2030	.0484
8-27	.06	.00		1535	2.70	.77		1556	.3260	.0748
9-1	1.85	.10		1539	1.20	.85		1602	.6290	.1226
9-4	.44	.07		1543	.30	.87		1610	.7810	.2166
9-7	.10	.00		1546	2.60	1.00		1614	.8450	.2708
9-9	2/ .41	.06		1549	5.40	1.27		1620	.7670	.3514
Watershed conditions:					1553	2.40	1.43	1626	.6290	.4212
Sorghum: Approximately 5-6'					1606	.51	1.55	1646	.3130	.5782
high and mature, some extra					1611	.48	1.59	1700	.2100	.6393
growth prior to selected event					1711	.10	1.69	1718	.1370	.6913
due to rainfall in early Sept.										
Last cultivation July 10-20 with				9-9	RG	A-12-R		1730	.0804	.7130
row crop cultivator.					1518	.00	.00	1736	.0612	.7201
Wheat: Approximately one-half					1522	3.15	.21	1750	.0346	.7313
of wheat stubble was disked or					1525	.40	.23	1810	.0172	.7400
plowed by August 15th; balance					1527	2.70	.32	1900	.0064	.7498
idle.										
Fallow: Cultivated from August					1530	2.00	.42	2000	.0025	.7543
20 to 30 with surface type					1534	1.20	.50	2200	.0006	.7574
equipment; soil very dry.					1540	2.20	.71	2330	.0003	.7580
Alfalfa: Small amount of growth					1543	.80	.75	9-10	0100	3/.0001
from second cutting, July 20 to					1547	1.65	.86			.7583
Sept. 9. (Continued on next page)										
Continued on next page										

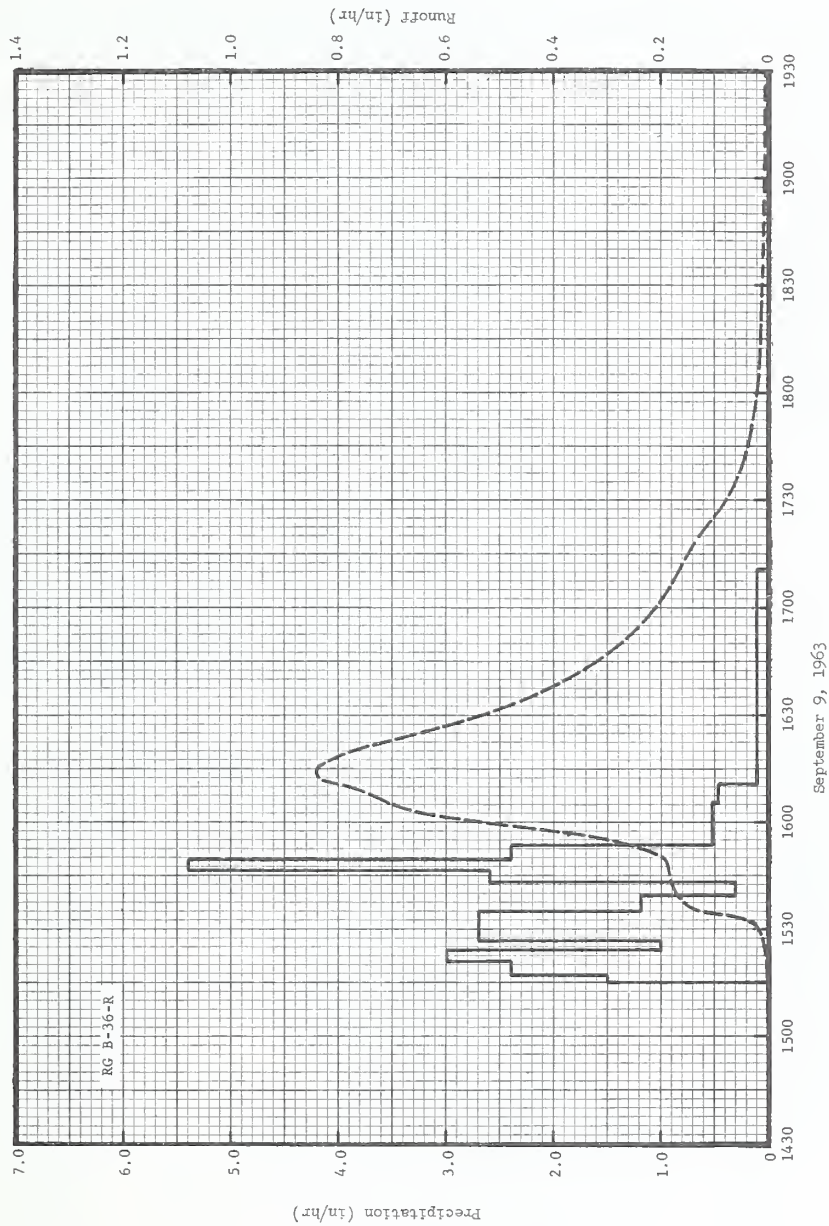
Continued on next page

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 485. FOR MAP OF W-3, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 44.1-4. 1/ ARITHMETIC AVERAGES OF RAIN GAGES B-36-R, A-12-R, B-10-R, and B-31-R. 2/ RAINFALL FROM 0750 TO 1000. 3/ BEGINNING OF NEXT EVENT.

1963 SELECTED RUNOFF EVENTS			HASTINGS, NEERASKA				WATERSHED W-3		44.1	
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 9, 1963—Continued										
Watershed conditions:(Continued) Pasture: Grass 1-4" high, brown from drought and overgrazed. Percent Corn..... 4% Sorghum..... 30% Wheat..... 18% Fallow..... 21% Pasture..... 18% Meadow..... 2% Sudan..... 3% Farm Yard..... 2% Roads..... 2% Total..... 100%			9-9	1551	5.40	1.22				
				1556	3.00	1.47				
				1600	2.40	1.63				
				1607	.34	1.67				
				1616	.27	1.71				
				1640	.05	1.73				
				1720	.06	1.77				
				RG	B-10-R					
				1519	.00	.00				
				1522	3.00	.15				
1525	.40	.17								
1537	2.35	.64								
1542	.72	.70								
1544	1.50	.75								
1546	2.70	.84								
1551	5.16	1.27								
1557	1.80	1.45								
1610	.28	1.51								
1706	.09	1.58								
1800	.06	1.63								
9-9	RG	B-31-R								
	1515	.00	.00							
	1517	1.50	.05							
	1521	2.55	.22							
	1524	3.20	.38							
	1527	1.00	.43							
	1535	2.85	.81							
	1539	1.20	.89							
	1543	.30	.91							
	1546	2.80	1.05							
	1549	5.60	1.33							
	1553	2.55	1.50							
	1606	.55	1.62							
	1611	.60	1.67							
	1711	.10	1.77							
	4 RG	AVG 1/	1.72							

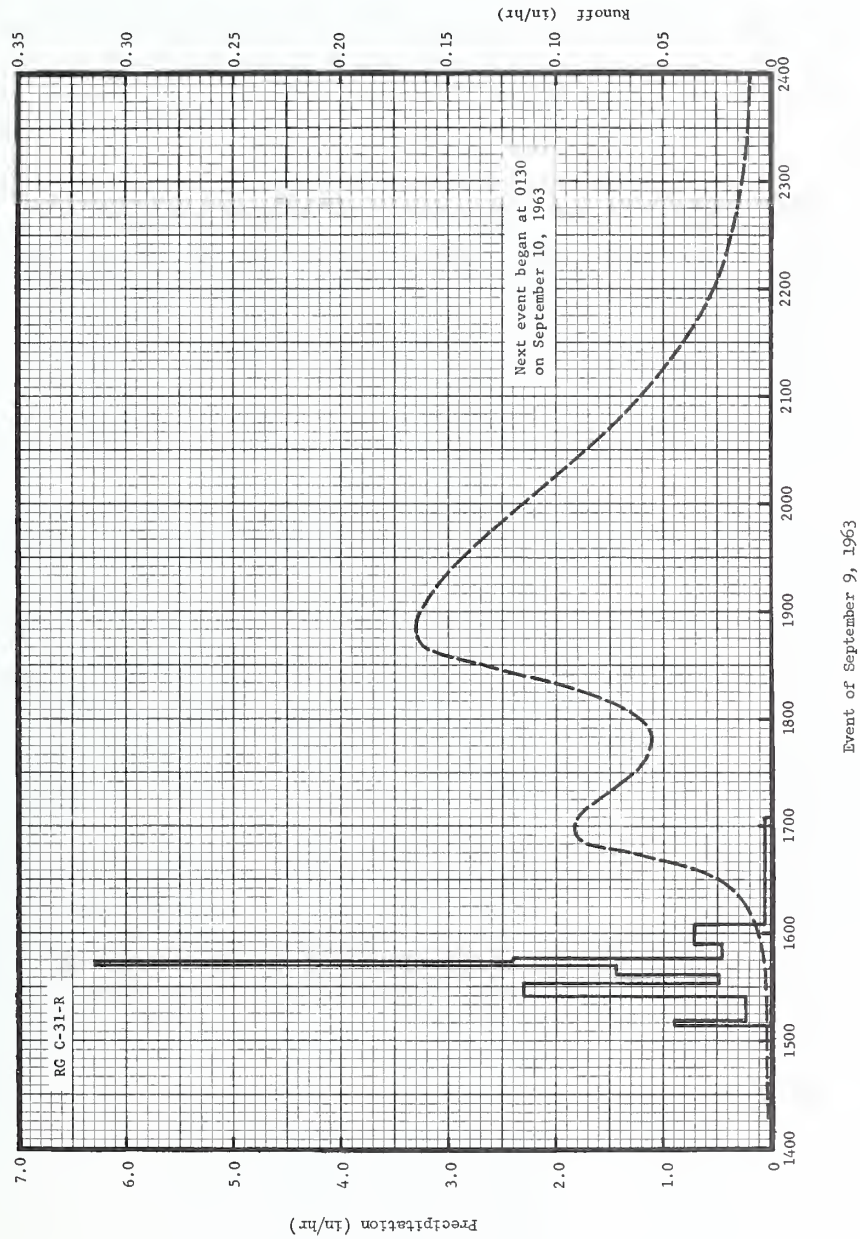
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 485. 1/ ARITHMETIC AVERAGES OF RG B-36-R, A-12-R, B-10-R, AND B-31-R.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 485. 1/ ARITHMETIC AVERAGES OF RG B-36-R, A-12-R, B-10-R, AND B-31-R.



HASTINGS, NEBRASKA WATERSHED W-3

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA AREA—2,086 ACRES (3.26 SQ. MI.)								WATERSHED W-8 44.3		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	2/.41 .01	2/.00 .19	2/1.50 .06	1.50 .00	.70 .01	4.29 .25	2.11 .01	2.37 .00	9.00 1.74	1.25 .05	2/.29 .00	2/.15 .00	23.12 2.32			
STA AV P (39-63) Q	.32 .02	.51 .03	1.19 .13	1.99 .08	3.45 .42	4.84 1.04	2.80 .40	2.69 .23	2.62 .30	1.17 .08	.65 .02	.40 T	22.63 2.75			
MEAN P 3/ 71 YR	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-9	.16	9-9	.15	9-9	.25	9-9	.51	9-9	.62	9-9	1.13	9-9	1.16	9-4	1.19
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1963	7-3 1959	.51	7-3 1959	.42	7-3 1959	.71	6-15 1957	1.67	6-15 1957	2.58	6-15 1957	3.43	6-15 1957	4.86	6-13 1957	4.99
NOTES: Quality of records: Monthly P, excellent; Monthly Q excellent to good except January 1 to April 1 which were good. Watershed conditions: crops of wheat and sorghum were in good conditions; corn was poor; alfalfa and meadow were poor. Fallow fields had fair cover. 1/ Averages of rain gages A-12-R, B-31-R, C-31-R and D-31-R. 2/ Averages of the Meteorological station and D-31-R only. 3/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1963 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA								WATERSHED W-8 44.3		
ANTECEDENT CONDITIONS				RAINFALL				RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of September 9, 1963																
	4 RG 4/			RG	C-31-R		9-9	1540	.0028	.0000						
8-11	.10	.00	9-9	1508	.00	.00		1630	.0249	.0116						
8-12	.50	.00		1512	.90	.06		1700	.0922	.0408						
8-17	.07	.00		1525	.23	.11		1750	.0554	.1023						
8-19	.77	.00		1532	2.31	.38		1850	.1650	.2125						
8-23	.18	.00		1537	.48	.42		1940	.1340	.3371						
8-27	.06	.00		1542	1.44	.54		2100	.0608	.4670						
9-1	1.95	.03		1544	6.30	.75		2200	.0264	.5106						
9-4	.38	.02		1546	2.40	.83		2400	.0095	.5465						
9-7	.08	.00		1554	.45	.89	9-10	0130	1/.0044	.5569						
9-9	5/.60	6/.01		1605	.71	1.02										
				1705	.04	1.06										
Watershed conditions:																
Sorghum: Approximately 5-6' high and mature, some extra growth prior to selected event due to rainfall in early Sept. Last cultivation July 10-20 with row crop cultivator.																
Wheat: Approximately one-half of wheat stubble was disked or plowed by August 15th; balance idle.																
Fallow: Cultivated from August 20 to 30 with surface type equipment; soil very dry.																
Alfalfa: Small amount of growth from second cutting, July 20, to Sept. 9.																
Pasture: Grass 1-4" high brown from drought and overgrazed.																
Corn	6%		9-9	RG	B-31-R											
Sorghum	27%			1515	.00	.00										
Oats	2%			1711		1.77										
Wheat	14%															
Fallow	13%		9-9	RG	D-31-R											
Alfalfa	9%			1520	.00	.00										
Pasture	21%			1725		.99										
Meadow	2%															
Sudan	2%															
Farm Yard	2%		4 RG		AVG 8/	1.40										
Roads	2%															
Total	100%															
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2103. FOR MAP OF W-8, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 44.1-4. 4/ ARITHMETIC AVERAGE OF RAIN GAGES C-31-R, A-12-R, B-31-R, AND D-31-R. 5/ RAINFALL FROM 0739 TO 1030. 6/ RUNOFF FROM 0750 TO 1540. 7/ BEGINNING OF NEXT EVENT. 8/ ARITHMETIC AVERAGE BASED ON ABOVE RAIN GAGES.																



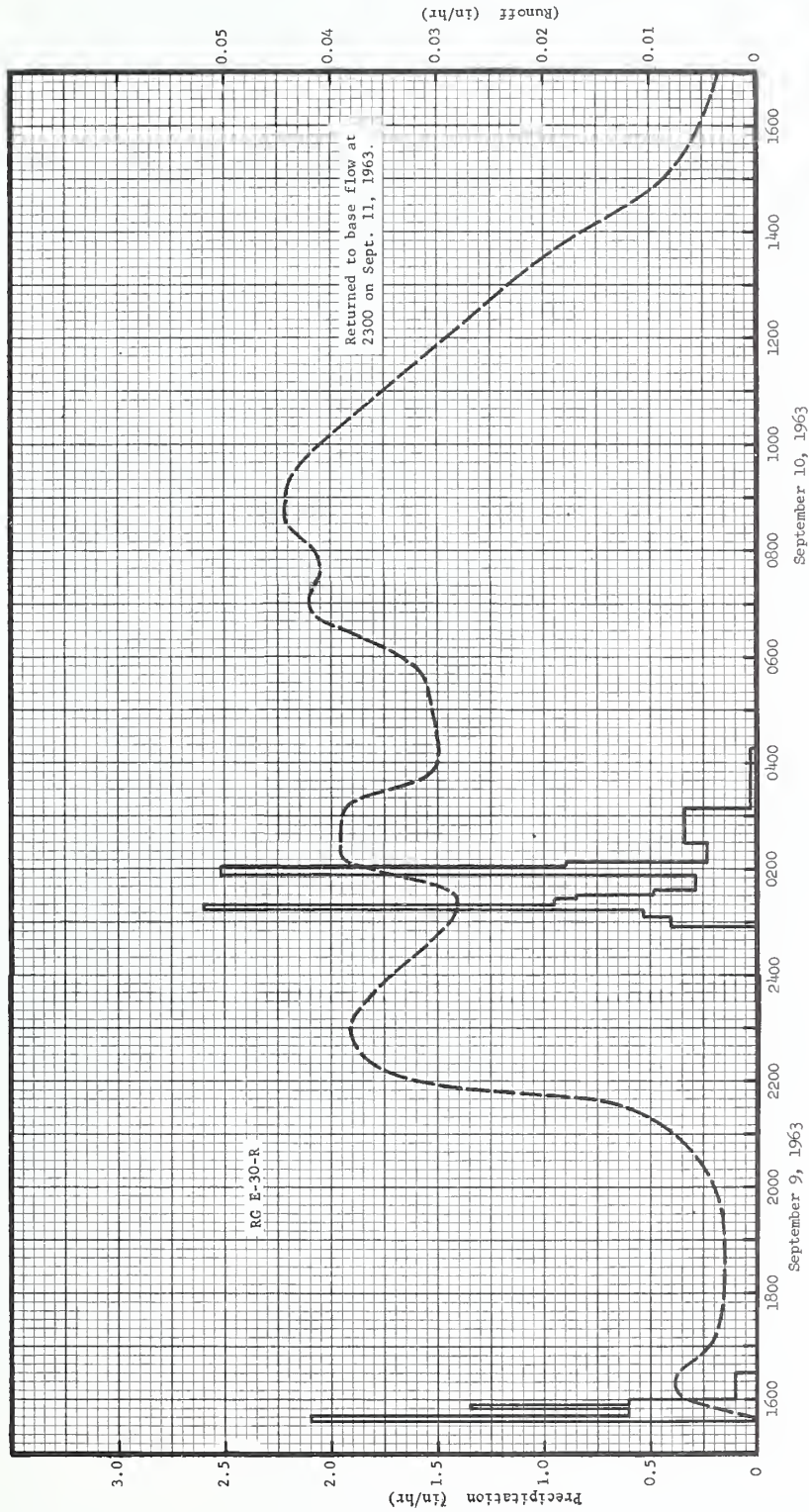
HASTINGS, NEBRASKA WATERSHED W-8

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA						WATERSHED W-11		44.4		
						AREA—3,490 ACRES (5.45 SQ. MI.)										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/	2/.44	2/.00	2/1.70	1.20	.87	4.28	2.20	2.23	8.93	1.11	2/.29	2/.15	23.40		
	Q	.01	.04	.08	T	T	.15	T	.00	1.08	.02	.00	.00	1.38		
STA	AV P	.32	.53	1.22	1.99	3.44	4.86	2.80	2.70	2.63	1.18	.67	.42	22.76		
(39-63)	Q	.01	.01	.13	.08	.40	.93	.37	.22	.27	.07	.01	T	2.50		
MEAN P 3/		.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81		
71 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-10	.04	9-9	.04	9-9	.09	9-9	.23	9-9	.43	9-9	.61	9-9	.64	9-4	.66
MAXIMUMS FOR PERIOD OF RECORD																
19 39 TO	6-15	.41	6-15	.40	6-15	.78	6-15	1.83	6-15	2.72	6-15	3.27	6-15	4.87	6-13	4.93
19 63	1957		1957		1957		1957		1957		1957		1957		1957	
NOTES: Quality of records: Monthly P, excellent; monthly Q, excellent to good except January 1 to April 1, which were good. Watershed conditions: crops of wheat and sorghum were in good condition; corn was poor; alfalfa and meadow were poor. Fallow fields had fair cover. 1/ Average of rain gages A-12-R, B-31-R, C-31-R, D-31-R, E-30-R and G-42-R. 2/ Based on records of Meteorological station, D-31-R and G-42-R only. 3/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1963 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA						WATERSHED W-11		44.4		
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF									
DATE	RAINFALL	RUNOFF	DATE	TIME	INTENSITY	ACC.	DATE	TIME	RATE	ACC.	DATE	TIME	RATE	ACC.		
MO-DAY	(inches)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)		
Event of September 9, 1963																
8-11	6 RG 4/	.00	9-9	RG	E-30-R	.00	9-9	1540	.0003	.0000						
8-12	.53	.00		1535	.00	.00		1620	.0078	.0026						
8-17	.05	.00		1541	2.10	.21		1700	.0046	.0068						
8-19	.80	.00		1550	.60	.30		1820	.0030	.0118						
				1554	1.35	.39		1900	.0030	.0138						
8-23	.19	.00		1600	.60	.45		2140	.0156	.0386						
8-27	.04	.00		1630	.10	.50		2200	.0318	.0466						
9-1	2.29	.04						2300	.0381	.0815						
9-2	.00	.01	9-10	0054	.00	.50		2320	.0375	.0941						
9-4	.36	.01		0103	.40	.56		2400	.0344	.1181						
9-7	.07	.00		0112	.53	.64	9-10	0120	.0282	.1598						
9-9	5/ .69	6/ .01		0118	2.60	.90		0220	.0392	.1935						
				0125	.95	1.01		0300	.0389	.2195						
				0130	.84	1.08		0400	.0298	.2539						
				0135	.48	1.12		0440	.0301	.2738						
				0152	.28	1.20		0540	.0313	.3045						
				0202	2.52	1.62		0700	.0421	.3535						
				0206	.90	1.68		0740	.0409	.3811						
				0229	.23	1.77		0840	.0443	.4237						
				0307	.34	1.98		0920	.0438	.4531						
				0416	.02	2.00		1200	.0290	.5502						
			9-9	RG	A-12-R	.00		1340	.0189	.5901						
				1518	.00	.00		1500	.0088	.6027						
				1522	3.15	.21		1600	.0052	.6097						
								1800	.0023	.6172						
				1525	2.40	.23		2000	.0013	.6208						
				1527	2.70	.32		2400	.0006	.6246						
				1530	2.00	.42	9-11	0800	.0002	.6278						
				1534	1.20	.50		1600	.0001	.6290						
				1540	2.20	.71		2300	7/ .0001	.6297						
				1607	.34	1.67										
				1616	.27	1.71										
				1640	.05	1.73										
				1720	.06	1.77										
			9-10	0040	.00	1.77										
Watershed conditions: Sorghum: Approximately 5-6' high and mature, some extra growth prior to selected event due to rainfall in early Sept. Last cultivation July 10-20 with row crop cultivator. Wheat: Approximately one-half of wheat stubble was disked or plowed by August 15th; balance idle. Fallow: Cultivated from August 20 to 30 with surface type equipment; soil very dry. Alfalfa: Small Amount of growth from second cutting, July 20, to Sept. 9. Pasture: Grass 1-4" high brown from drought and over-grazed. Percent Corn..... 4% Sorghum..... 28% Oats..... 1% Wheat..... 17% Fallow..... 13% Alfalfa..... 8% Pasture..... 21% Meadow..... 3% Sudan..... 1% Farm Yard..... 2% Roads..... 2% Total..... 100%																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3519. FOR MAP OF W-11, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 44.1-4. 4/ ARITHMETIC AVERAGE OF RAIN GAGES E-30-R, A-12-R, B-31-R, C-31-R, D-31-R, AND G-42-R. 5/ RAINFALL FROM 0730 TO 1330. 6/ RUNOFF FROM 0800 TO 1540. 7/ BEGINNING OF NEXT EVENT.																

Cooperative Research Project of USDA and Nebraska Agricultural Station

1963			SELECTED RUNOFF EVENT			HASTINGS, NEBRASKA			WATERSHED W-11			44.4
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
			Event of September 9, 1963—Continued									
				0101	.14	1.82						
				0104	1.00	1.87						
				0108	1.20	1.95						
				0115	.51	2.01						
				0120	1.20	2.11						
				0133	.32	2.18						
				0203	.26	2.31						
				0210	.77	2.40						
				0212	3.30	2.51						
				0220	.68	2.60						
				0228	.83	2.71						
				0236	.60	2.79						
				0244	.08	2.80						
				0314	.10	2.85						
				0404	.01	2.86						
				1104	.00	2.88						
				1309	.01	2.91						
			9-9	RG	B-31-R							
				1515	.00	.00						
				1711		1.77						
			9-10	0040	.00	1.77						
				0340		2.80						
			9-9	RG	C-31-R							
				1508	.00	.00						
				1512	.90	.06						
				1525	.23	.11						
				1532	2.31	.38						
				1537	.48	.42						
				1542	1.44	.54						
				1544	6.30	.75						
				1546	2.40	.83						
				1554	.45	.89						
				1605	.71	1.02						
				1705	.04	1.06						
			9-10	0037	.00	1.06						
				0053	.15	1.10						
				0102	.27	1.14						
				0110	.15	1.16						
				0116	.70	1.23						
				0130	.43	1.33						
				0200	.26	1.46						
				0213	1.90	1.87						
				0221	.98	2.00						
				0235	.21	2.05						
				0240	.72	2.11						
				0330	.08	2.18						
				1100	.00	2.20						
			9-9	RG	D-31-R							
				1520	.00	.00						
				1725		.99						
			9-10	0054	.00	.99						
				0203		2.24						
			9-9	RG	G-42-R							
				1531	.00	.00						
				1535	.60	.04						
				1542	.17	.06						
				1556	.77	.24						
				1618	.16	.30						
				1804	.02	.33						
			9-10	0057	.00	.33						
				0114	.56	.49						
				0124	.30	.54						
				0134	.36	.60						
				0140	.20	.62						
				0144	.75	.67						
				0147	.40	.69						
				0154	.95	.80						
Continued on next page												

1963			SELECTED RUNOFF EVENT				HASTINGS, NEBRASKA				WATERSHED W-11				44.4	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
			Event of September 9, 1963—Continued													
			9-10	0202	.60	.88										
				0217	.20	.93										
				0225	.60	1.01										
				0229	2.10	1.15										
				0252	.10	1.19										
				0322	.06	1.22										
			6 RG	AVG <u>1</u> /	2.22											
NOTES: <u>1</u> / ARITHMETIC AVERAGE BASED ON RAIN GAGES E-30-R, A-12-R, B-31-R, C-31-R, D-31-R, AND G-42-R.																

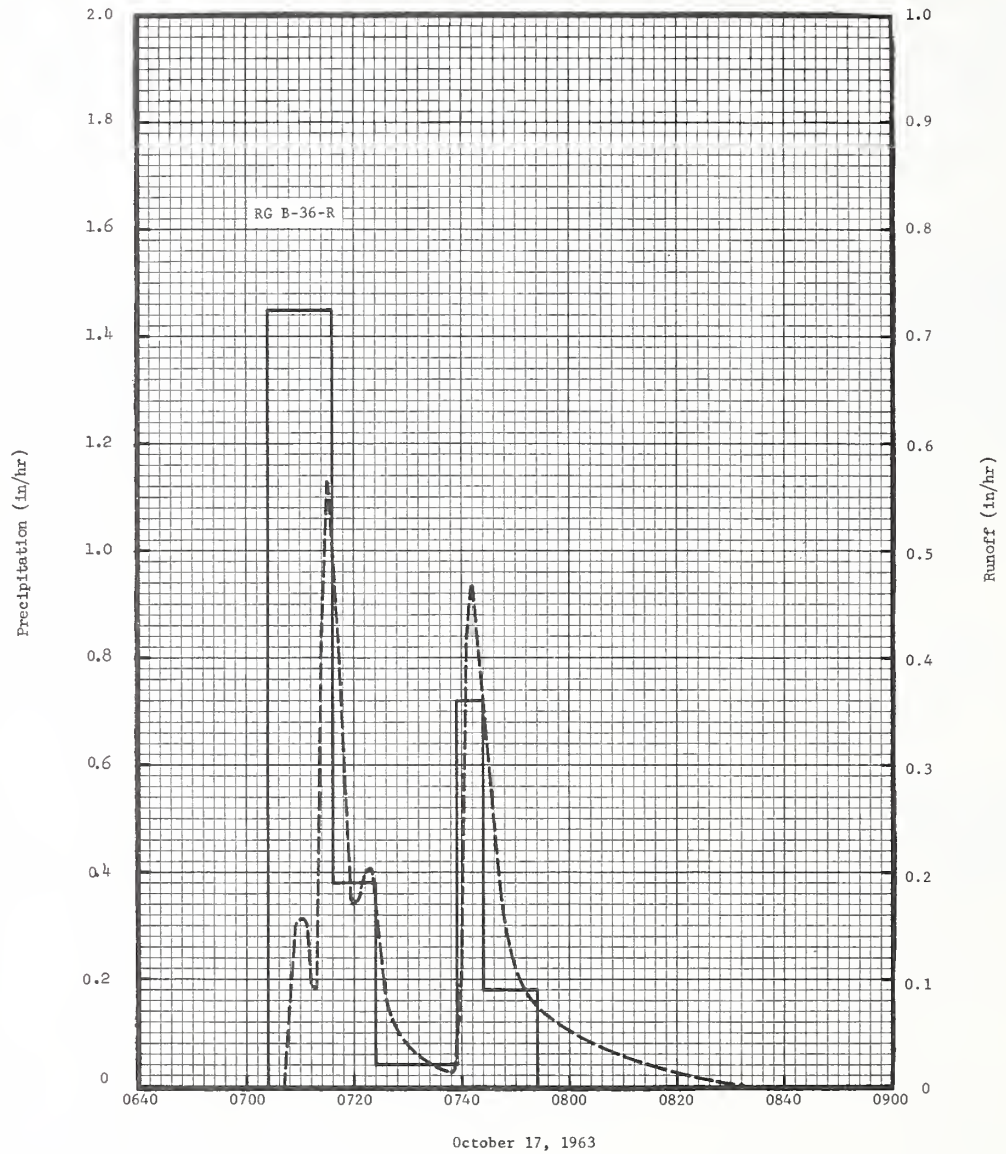


HASTINGS, NEBRASKA WATERSHED W-11

MONTHLY PRECIPITATION AND RUNOFF (inches)							HASTINGS, NEBRASKA WATERSHED 1-H AREA—3.62 ACRES							44.5		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1962 P 1/ Q 3/	.38 .10E	.61 .00	1.80 .14	.46 .00	2.97 .00	4.47 .00	5.65 T	4.88 .01	2.83 .00	1.95 T	2/ .17 .00	2/ .40 .00	26.57 .25			
1963 P 1/ Q 1/	2/ .32 .00	2/ .00 T	2/1.52 .22	2/1.07 .00	.51 .00	4.25 .00	2.16 .00	2.21 .00	8.27 .00	1.46 .00	2/ .30 .00	2/ .13 .00	22.20 .22			
STA AV P (40-63)Q	.30 .01	.48 T	1.13 .04	1.95 T	3.52 .02	4.86 .10	2.80 .06	2.71 .01	2.67 .01	1.21 .01	.65 .00	.38 .00	22.66 .26			
MEAN P 4/ 71 YR	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-15	.16	3-15	.13	3-15	.19	3-15	.21	3-15	.21	3-15	.21	3-15	.21	3-10	.22
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1963	6-16 1957	1.35	6-1 1951	.69	6-1 1951	.89	6-1 1951	.92	6-1 1951	.92	6-1 1951	.92	6-15 1957	.96	6-10 1957	1.13
Notes: Quality of records: Monthly P and Q, excellent, except Jan. 1 to April 1, which are good. Watershed conditions 100% native grass meadow in fair condition. Mowed for hay Sept. 10 with yield of 600 lbs. per acre. 1/ Months of Jan., to April and Dec. for 1962 and months of Jan., Feb., Mar., Nov., and Dec. for 1963 may include snow and snow melt. 2/ Based on meteorological station records. 3/ Previously published runoff totals for Aug. and Annual Total revised and correct values underlined. 4/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr.																
NO SUITABLE SELECTED RUNOFF EVENT TO REPORT. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 44.5-4.																
Cooperative Research Project of USDA and Nebraska Agricultural Experiment Station 44.5-1																

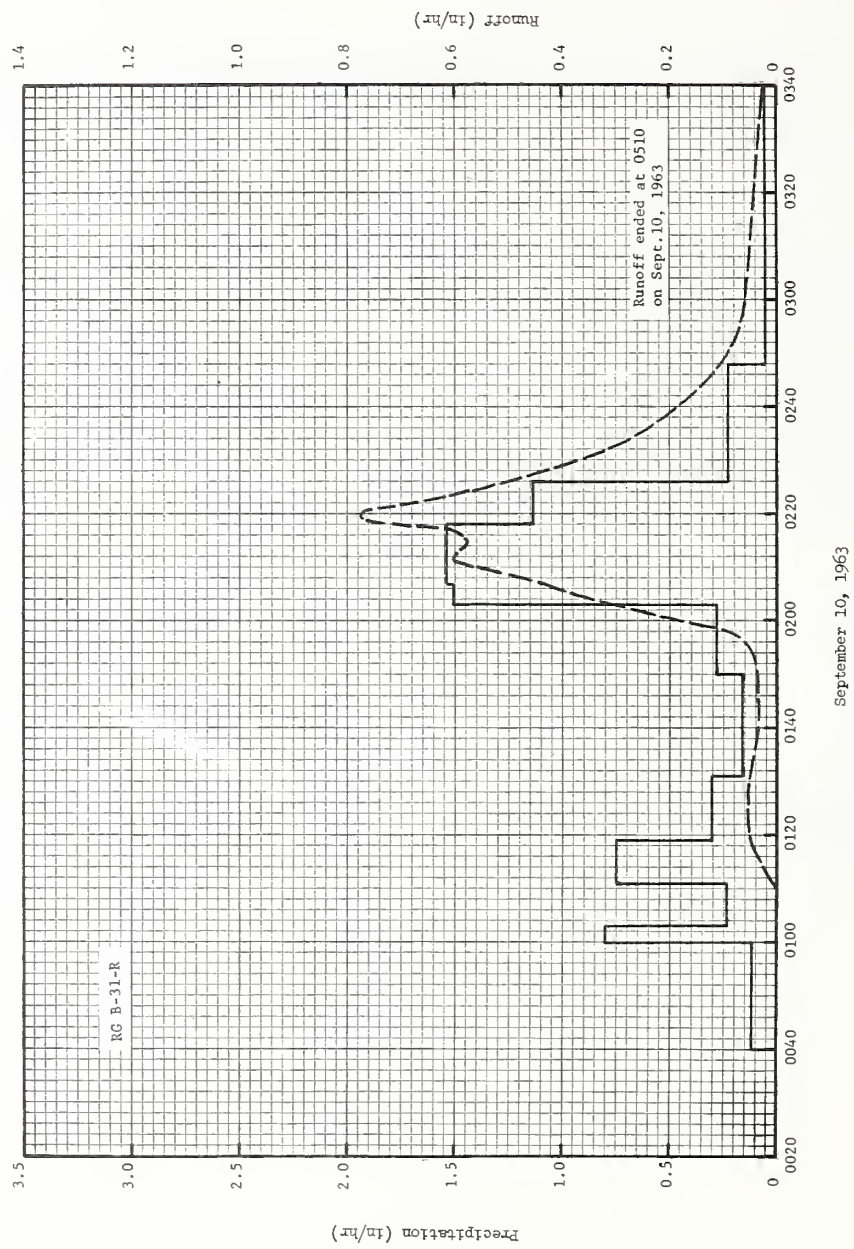
MONTHLY PRECIPITATION AND RUNOFF (inches)							HASTINGS, NEBRASKA WATERSHED 2-H AREA—3.40 ACRES							44.6		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q 1/	2/ .32 .00	2/ .00 T	2/1.52 .25	1.07 T	.51 .00	4.25 .00	2.16 .00	2.21 .00	8.27 .05	1.46 .00	2/ .30 .00	2/ .13 .00	22.20 .30			
STA AV P (40-63) Q	.31 .02	.52 .01	1.18 .08	1.97 .01	3.54 .08	4.68 .14	3.06 .15	2.76 .07	2.73 .03	1.28 .01	.73 T	.43 .00	23.19 .60			
MEAN P 3/ 71 YR	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-9	.16	3-15	.12	3-15	.19	3-15	.23	3-15	.23	3-15	.23	3-15	.23	3-10	.25
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1963	7-3 1959	2.52	7-3 1959	1.38	7-3 1959	1.41	7-3 1959	1.41	7-3 1959	1.41	7-3 1959	1.41	7-3 1959	1.41	6-27 1959	1.49
Notes: Quality of records: Monthly P and Q, excellent, except Jan. 1 to April 1, which are good. Watershed conditions: In native grass; fenced in May for controlled grazing from June 5 to Oct. 3; over-grazed from Oct. 4 to Oct. 16. 1/ Months of Jan., Feb., Mar., Nov., and Dec. may include snow and snow melt. 2/ Based on meteorological station records. 3/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr. 4/ Station records began Apr. 1, 1939; part year records for 1939 and period of no records, 1955 through 1957, not included in station averages.																
NO SUITABLE SELECTED RUNOFF EVENT TO REPORT. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 44.6-3.																

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA WATERSHED 3-H AREA—3.77 ACRES								44.7		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1962	P 1/	.38	.61	1.80	.46	2.97	4.47	5.65	4.88	2.83	1.95	2/.17	2/.40	26.57		
	Q 3/	.15E	.00	.53	.00	.01	.19	.92	1.21	.27	.24	.00	.00	3.52		
1963	P 1/	2/.32	2/.00	2/1.52	1.07	.51	4.25	2.16	2.21	8.27	1.46	2/.30	2/.13	22.20		
	Q	.00	T	.06	.00	.00	.22	.01	.00	3.13	.33	.00	.00	3.75		
STA AV ⁴ / (40-63)	P	.31	.52	1.18	1.97	3.54	4.68	3.06	2.76	2.73	1.28	.73	.43	23.19		
	Q	.03	.03	.26	.23	.83	1.49	.82	.39	.53	.25	.04	.00	4.90		
MEAN P 5/ 71 YR		.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-9	3.15E	9-10	.69	9-10	.84	9-10	.88	9-9	1.50	9-9	1.54	9-9	1.54	9-9	1.75
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1963	7-3 1959	6.45	7-3 1959	2.34	7-3 1959	2.35	6-1 1951	3.36	6-1 1951	3.74	6-1 1951	3.74	6-1 1951	3.74	6-1 1951	4.31
Notes: Quality of records: Monthly P and Q, excellent, except Jan. 1 to April 1, which are good. Watershed conditions fallow seeded to wheat on Sept. 17, 1963 in excellent condition. General crop rotation of fallow, wheat and sorghum, using minimum tillage practices. 1/ Months of Jan., Feb., Mar., Apr., and Dec. for 1962 and months of Jan., Feb., Mar., Nov., and Dec. for 1963 may include snow and snow melt. 2/ Based on meteorological station records. 3/ Previously published runoff totals for the months of June, Sept., and Annual Total revised and correct values underlined. 4/ Station records began March 27, 1939; part year records for 1939 and period of no records, 1955 through 1957, not included in station averages. 5/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1963 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA WATERSHED 3-H									44.7	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of October 17, 1963																
9-20	RG B-36-R	.03 .70 .50 .00	10-17	RG	B-36-R	.00 .29 .34 .35	10-17	0707	.000	.00 .01 .02 .02						
9-21	.82E			0704	.00			0710	.157							
9-22	1.32			0716	1.45			0713	.091							
9-22	.67			0724	.38			0714	.421							
9-24	.07			0739	.04			0715	.566							
10-17	6/ .57	.00		0744	.72	.41		0717	.421	.04						
Watershed conditions: 100% Fallow, used teddar on Aug. 5. Crop rotation of fallow, wheat and sorghum.																
				0754	.18	.44		0720	.170	.05						
								0723	.204	.06						
								0727	.062	.07						
								0738	.012	.08						
								0740	.106	.08						
								0741	.421	.08						
								0742	.468	.09						
								0743	.421	.10						
								0752	.087	.14						
								0832	.000	.17						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.802. FOR MAP OF AREA, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 44.7-4. 6/ RAINFALL FROM 0440 TO 0530.																



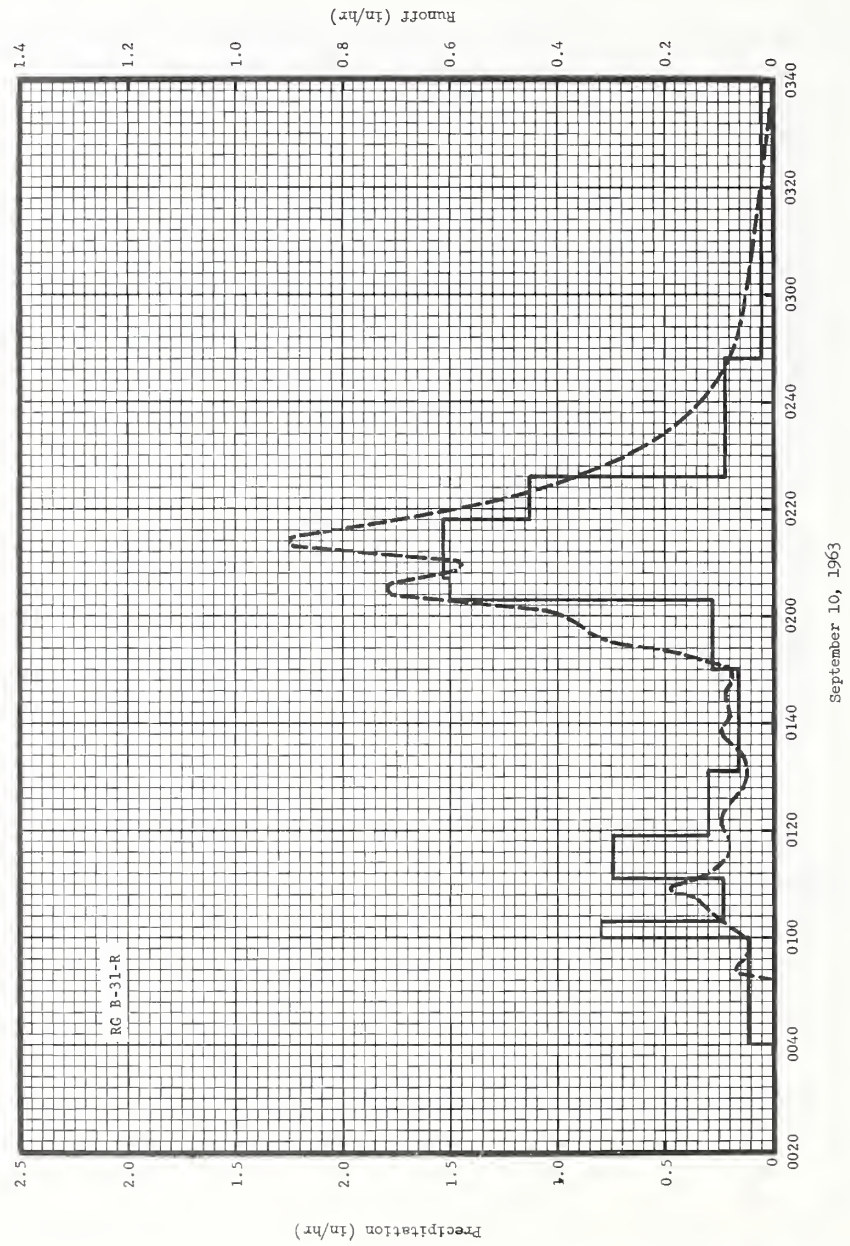
HASTINGS, NEBRASKA WATERSHED 3-H

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA		WATERSHED 4-H		44.8						
						AREA—3.64 ACRES										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/	2/.32	2/.00	2/1.52	1.07	.51	4.25	2.16	2.21	8.27	1.46	2/.30	2/.13	22.20		
	Q	.00	T	.06	T	.00	.11	.03	T	1.48	.08	.00	.00	1.76		
STA AV	2/P	.31	.53	1.18	2.01	3.54	4.64	3.04	2.74	2.75	1.27	.72	.42	23.15		
	(40-63) Q	.03	.02	.21	.21	.86	1.18	.69	.30	.49	.21	.02	T	4.22		
MEAN P	4/															
71 YR		.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1962	8-23	5.48	8-23	1.03E	8-23	1.30	8-23	1.50	8-23	1.51	8-23	1.51	8-23	1.51	7-11	2.00
1963	9-9	2.02E	9-9	.59E	9-9	.61E	9-9	.61E	9-9	1.04E	9-9	1.07E	9-9	1.07E	9-4	1.08E
MAXIMUMS FOR PERIOD OF RECORD																
1940 TO	6-26	7.67	7-3	2.13E	7-3	2.15E	6-1	3.19	6-1	3.19	6-1	3.19	6-1	3.19	3-26	3.75E
1963	1952		1959		1959		1951		1951		1951		1951		1960	
Notes: Quality of records: Monthly P and Q, good except Jan. 1 to April 1, which are fair. Watershed conditions: In wheat, with average yield of 30 bu/acre. General crop rotation of wheat, sorghum and fallow using minimum tillage practices. 1/ Months of Jan., Feb., Mar., Apr., and Dec. may include snow and snow melt. 2/ Based on meteorological station records. 3/ Station records began Apr. 1, 1939; part-year records for 1939 and period of no records, 1955 through 1957, not included in station averages. 4/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr. 5/ Revision of previously published data reduced value underlined. 6/ No maximum discharges of flow volumes for 1957.																
1963 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA						WATERSHED 4-H		44.8		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of September 10, 1963																
	RC Met.Sta.		9-10	RG	B-31-R		9-10	0110	.000	.00						
8-12	.58	.00		0040	.00	.00		0117	.042	.00	T					
8-17	.14	.00		0100	.12	.04		0130	.046	.01						
8-18	.84	T		0103	.80	.08		0140	.036	.02						
8-23	.24	.00		0111	.23	.11		0155	.056	.03						
8-27	.05	.00		0119	.75	.21		0158	.094	.03						
9-1	1.86	.04		0131	.30	.27		0201	.234	.04						
9-4	.49	.01		0150	.16	.32		0203	.268	.05						
9-7	.12	.00		0203	.28	.38		0207	.436	.07						
9-9	7/2.12	.67E		0207	1.50	.48		0211	.600	.11						
Watershed conditions: 100% wheat, combined on June 24, with a yield of 30 bushels per acre. Crop rotation of wheat, sorghum and fallow.				0218	1.53	.76		0215	.572	.15						
				0226	1.13	.91		0220	.776	.20						
				0248	.22	.99		0223	.627	.24						
				0340	.05	1.03		0228	.436	.28						
								0236	.243	.33						
			9-10	RG	Met.Sta.	Total		0250	.094	.37						
				0057		.00		0310	.049	.39						
				0350E		1.06		0340	.021	.41						
								0410	.008	.42						
								0510	.000	.42						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.670. FOR MAP OF AREA, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 44.8-3. 7/ RAINFALL FROM 1518 TO 1634.																



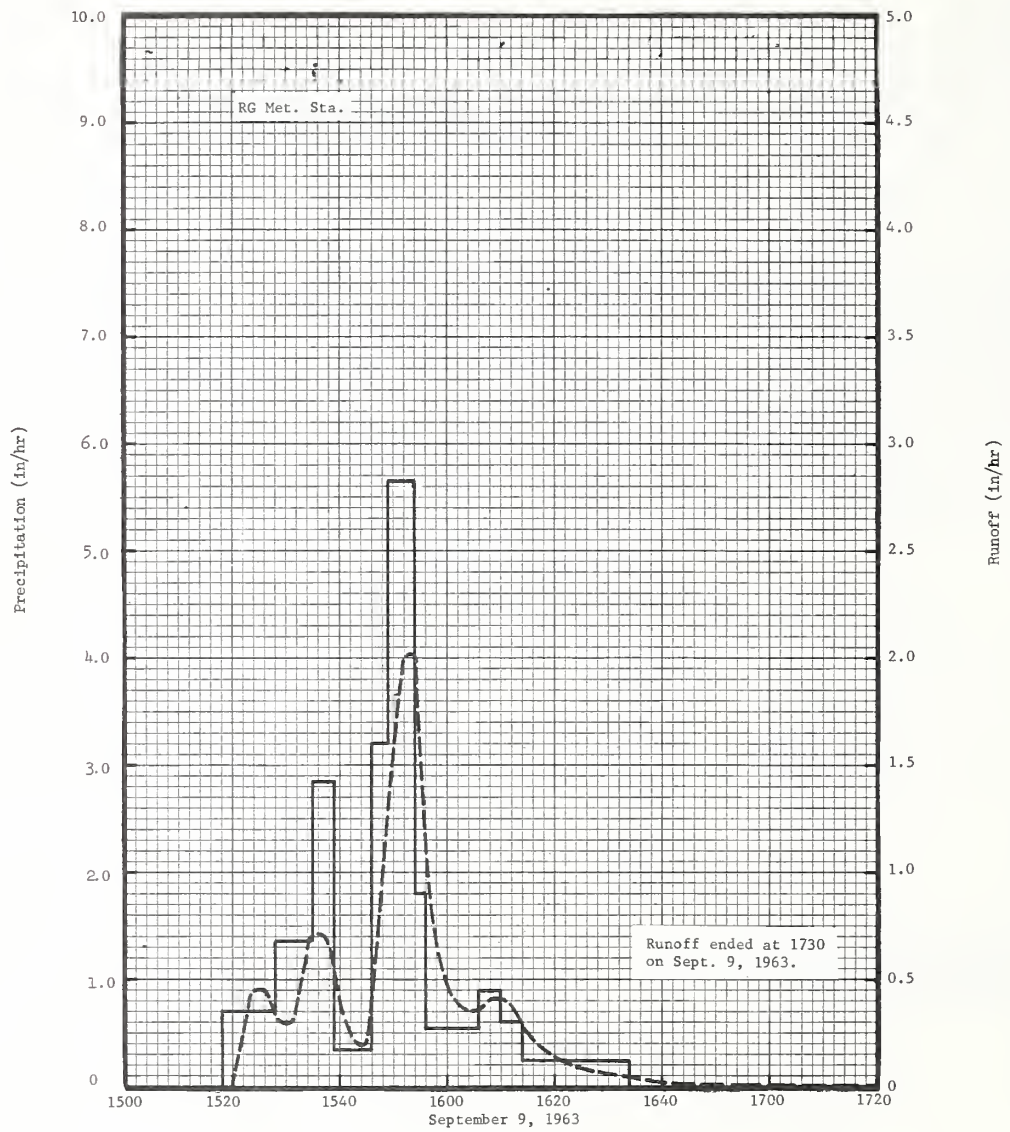
HASTINGS, NEBRASKA WATERSHED 4-H

MONTHLY PRECIPITATION AND RUNOFF (inches)							HASTINGS, NEBRASKA							WATERSHED 5-H		44.9
							AREA—4.02 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/	2/.32	2/.00	2/1.52	1.07	.51	4.25	2.16	2.21	8.27	1.46	2/.30	2/.13	22.20		
	Q	.00	T	.04	.00	.00	.52	.06	.00	1.76	.11	.00	.00	2.49		
STA AV ³ /P		.31	.50	1.11	1.91	3.38	4.59	2.92	2.59	2.77	1.20	.66	.39	22.33		
(40-63) Q		.03	.01	.17	.10	.56	1.03	.48	.23	.28	.11	.02	.00	3.02		
MEAN P 4/		.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81		
71 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-9	1.98	9-9	.61	9-9	.66	9-9	.66	9-9	1.15	9-9	1.16	9-9	1.16	9-4	1.19
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO	6-14	4.24	7-3	1.75	7-14	1.78	6-1	2.58	6-1	2.76	6-1	2.76	6-1	2.76	6-1	3.14
1963	1960		1959		1952		1951		1951		1951		1951		1951	
NOTES: Quality of records: Monthly P and Q, excellent except Jan. 1 to April 1, which are good. Watershed conditions: in sorghum with average yield of 50 bu./acre. General crop rotation of sorghum, fallow and wheat, using minimum tillage practices. 1/ Months of Jan., Feb., Mar., Nov., and Dec. may include snow and snow melt. 2/ Based on meteorological station records. 3/ Station records began April 1, 1939; part year records for 1939 and period of no record, 1957, not included in station averages. 4/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr. 5/ No maximum discharges or flow volumes for 1957.																
1963 SELECTED RUNOFF EVENT							HASTINGS, NEBRASKA							WATERSHED 5-H		44.9
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE	RAINFALL	RUNOFF	DATE	TIME	INTENSITY	ACC.	DATE	TIME	RATE	ACC.						
MO-DAY	(inches)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)						
Event of September 10, 1963																
8-12	RG Met.Sta.	.00	9-10	RG	B-31-R		9-10	0052	.000	.00						
8-17	.58	.00		0040	.00	.00		0054	.069	T						
8-18	.14	.00		0100	.12	.04		0058	.042	T						
8-23	.84	T		0103	.80	.08		0105	.119	.01						
	.24	.00		0111	.23	.11		0107	.141	.01						
8-27	.05	.00		0119	.75	.21		0109	.192	.02						
9-1	1.86	.04		0131	.30	.27		0112	.119	.03						
9-4	.49	.02		0150	.16	.32		0117	.077	.04						
9-7	.12	.00		0203	.28	.38		0122	.095	.05						
9-9	6/2.12	.66		0207	1.50	.48		0131	.048	.06						
				0218	1.53	.76		0139	.095	.07						
				0226	1.13	.91		0141	.077	.07						
				0248	.22	.99		0145	.086	.08						
				0340	.05	1.03		0150	.077	.08						
								0153	.171	.09						
Watershed conditions: 100% sorghum; cultivated on June 29. Crop rotation of sorghum, fallow and wheat.										0155	.301	.10				
										0200	.395	.13				
										0205	.718	.17				
										0210	.580	.23				
										0214	.904	.28				
										0225	.395	.40				
										0238	.153	.46				
										0255	.058	.49				
										0335	.000	.51				
			9-10	RG	Met. Sta.											
				0057		.00										
				0350E		1.06										
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4.054. FOR MAP OF AREA, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 44.9-4. 6/ RAINFALL FROM 0740 TO 1634.																



HASTINGS, NEBRASKA WATERSHED 5-H

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA AREA—4.01 ACRES						WATERSHED 6-H 44.10				
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	2/.32 .00	2/.00 T	2/1.52 .05	1.07 .00	.51 .00	4.25 .85	2.16 .04	2.21 .00	8.27 1.51	1.46 .11	2/.30 .00	2/.13 .00	22.20 2.56			
STA AV ³ / _P (40-63) Q	.31 .02	.50 .02	1.11 .16	1.91 .10	3.38 .63	4.59 1.15	2.92 .54	2.59 .21	2.77 .43	1.20 .10	.66 .04	.39 .00	22.33 3.40			
MEAN P ⁴ / _{71 YR}	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-9	2.02	9-9	.59	9-9	.61	9-9	.61	9-9	1.03	9-9	1.07	9-9	1.07	9-4	1.10
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1963 5/	5-22 1954	5.70	7-10 1951	1.66	6-1 1951	2.09	6-1 1951	2.64	6-1 1951	2.80	7-10 1951	2.85	7-10 1951	2.85	7-10 1951	3.53
NOTES: Quality of records: Monthly P and Q, excellent, except Jan. 1 to April 1, which are good. Watershed conditions; in sorghum with average yield of 50 bu./acre. General crop rotation of sorghum, fallow and wheat, using minimum tillage practices. 1/ Months of Jan., Feb., Mar., Nov., and Dec. may include snow and snow melt. 2/ Based on meteorological station records. 3/ Station records began April 1, 1939; part-year records for 1939 and period of no record for 1957 not included in station averages. 4/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr. 5/ No maximum discharges or flow volumes for 1957.																
1963 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA						WATERSHED 6-H 44.10				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of September 9, 1963																
	RG Met.Sta.		9-9	RG	Met. Sta.		9-9	1520	.000	.00						
8-12	.58	.00		1518	.00	.00		1525	.450	.02						
8-17	.14	.00		1528	.72	.12		1530	.302	.05						
8-18	.84	.00		1535	1.37	.28		1536	.704	.10						
8-23	.24	.00		1539	2.85	.47		1540	.395	.14						
8-27	.05	.00		1546	.34	.51		1544	.192	.16						
9-1	1.86	.02		1549	3.20	.67		1550	1.530	.24						
9-4	.49	.02		1554	5.64	1.14		1553	2.020	.33						
9-7	.12	.00		1556	1.80	1.20		1555	1.580	.39						
9-9	6/.65	.03		1606	.54	1.29		1600	.484	.48						
				1610	.90	1.35		1605	.356	.51						
				1614	.60	1.39		1610	.418	.55						
				1634	.24	1.47		1615	.250	.57						
								1620	.141	.59						
								1625	.081	.60						
								1635	.036	.61						
								1645	.012	.61						
								1700	.003	.61						
								1730	.000	.61						
Watershed conditions: 100% sorghum, cultivated on July 18. Crop rotation of sorghum, fallow and wheat.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4.044. FOR MAP OF AREA, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 44.10-4. 6/ RAINFALL FROM 0740 TO 0820.																



HASTINGS, NEBRASKA WATERSHED 6-H

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA AREA—4.26 ACRES							WATERSHED 7-H 44.11	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 P 1/ Q	2/.32 .00	2/.00 T	2/1.52 .08	1.07 T	.51 .00	4.25 .07	2.16 .02	2.21 .00	8.27E .77	1.46 .02	2/.30 .00	2/.13 .00	22.20 .96	
STA AV ³ / _P (40-63) Q	.31 .02	.50 .02	1.11 .15	1.91 .11	3.38 .58	4.59 .83	2.92 .45	2.59 .16	2.77 .41	1.20 .09	.66 .03	.39 .00	22.33 2.85	
MEAN P ⁴ / _{71 YR}	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-9	.60E	9-9	.38E	9-9	.38E	9-9	.60E	9-9	.60E	9-9	.60E	9-9	.60E	9-4	.60E

MAXIMUMS FOR PERIOD OF RECORD

1939 TO 1963/1954	5-22 4.76	7-3 2.04	7-3 2.06	7-3 2.06	7-3 2.06	7-3 2.06	7-3 2.06	7-3 2.06	7-3 2.06	7-3 2.06	7-10 2.25	3-26 3.42		
	1959	1959	1959	1959	1959	1959	1959	1959	1959	1959	1951	1960		

NOTES: Watershed conditions: Watershed in wheat with an average yield of 30 bu/acre with a crop rotation of wheat, milo and fallow. 1/ Months of Jan., Feb., Mar., Nov., and Dec. may include snow and runoff from snowmelt. 2/ Based on meteorological station records. 3/ Station records began April 1, 1939; part-year records for 1939 and period of no record for 1957 not included in station averages. 4/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr.

NO SUITABLE SELECTED RUNOFF EVENT TO REPORT. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 44.11-4

Cooperative Research Project of USDA and Nebraska Agricultural Experiment Station

44.11-1

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA AREA—3.97 ACRES							WATERSHED 8-H 44.12	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 P 1/ Q	2/.32 .00	2/.00 T	2/1.52 .01	1.07 .00	.51 .00	4.25 .00	2.16 .00	2.21 .00	8.27 1.31	1.46 .21	2/.30 .00	2/.13 .00	22.20 1.53	
STA AV ³ / _P (40-63) Q	.31 .01	.53 .01	1.18 .10	2.01 .04	3.54 .39	4.64 .67	3.04 .35	2.74 .08	2.75 .23	1.27 .06	.72 T	.42 .00	23.15 1.94	
MEAN P ⁴ / _{71 YR}	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-9	.40E	9-9	.30E	9-9	.35E	9-21	.43	9-21	.48	9-21	.61	9-21	.85	9-20	.86

MAXIMUMS FOR PERIOD OF RECORD

1939 TO 1963/1943	6-10 3.66	7-3 1.67	7-3 1.70	6-1 2.35	6-1 2.46	6-1 2.46	6-1 2.46	6-1 2.46	6-1 2.46	6-1 2.46	6-1 2.46	6-1 2.46	2.78	
	1959	1959	1959	1951	1951	1951	1951	1951	1951	1951	1951	1951	1951	

NOTES: Watershed conditions: Watershed in fallow, seeded to wheat on Sept. 17, with a crop rotation of fallow, wheat and milo. 1/ Months of Jan., Feb., Mar., Nov., and Dec. may include snow and runoff from snowmelt. 2/ Based on meteorological station records. 3/ Station records began April 1, 1939; part-year records for 1939 and periods of no record, 1955 through 1957, not included in station averages. 4/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr.

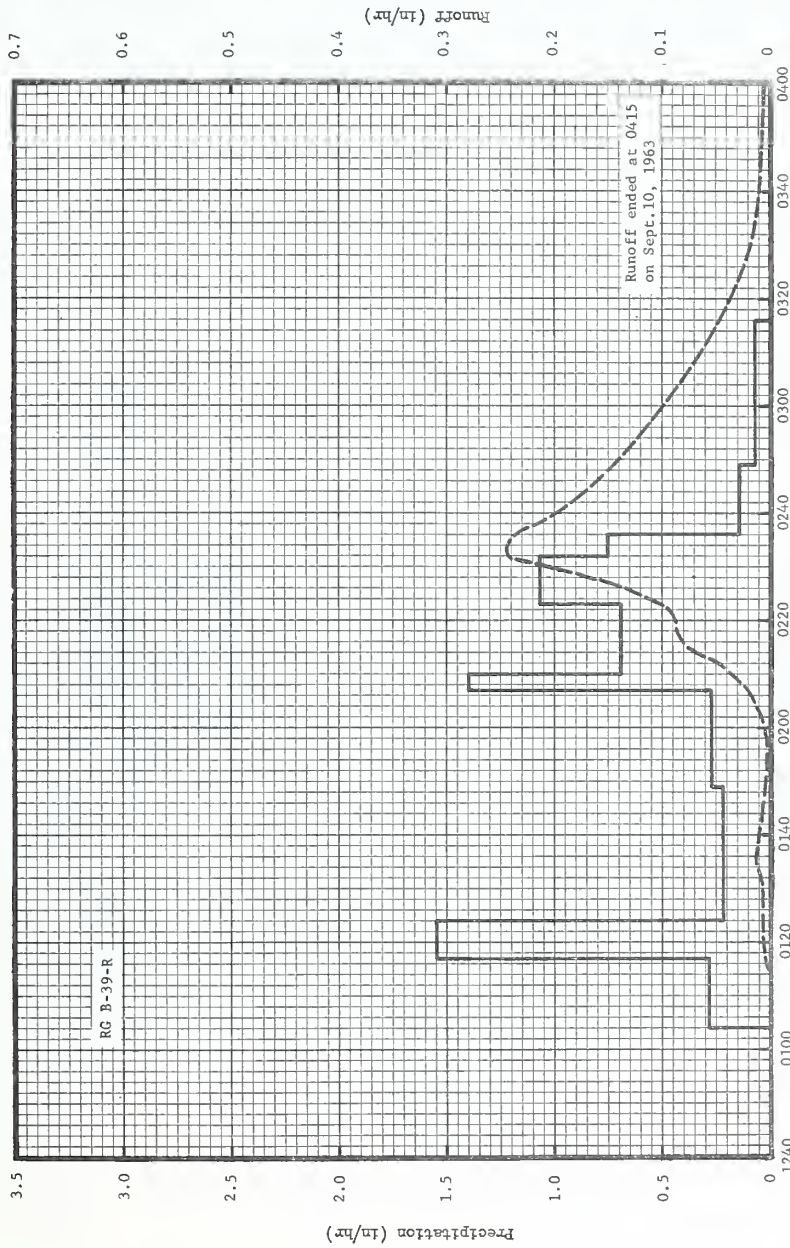
NO SUITABLE SELECTED RUNOFF EVENT TO REPORT. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 44.12-3.

Cooperative Research Project of USDA and Nebraska Agricultural Experiment Station

(See 44.11-1 above)

44.12-1

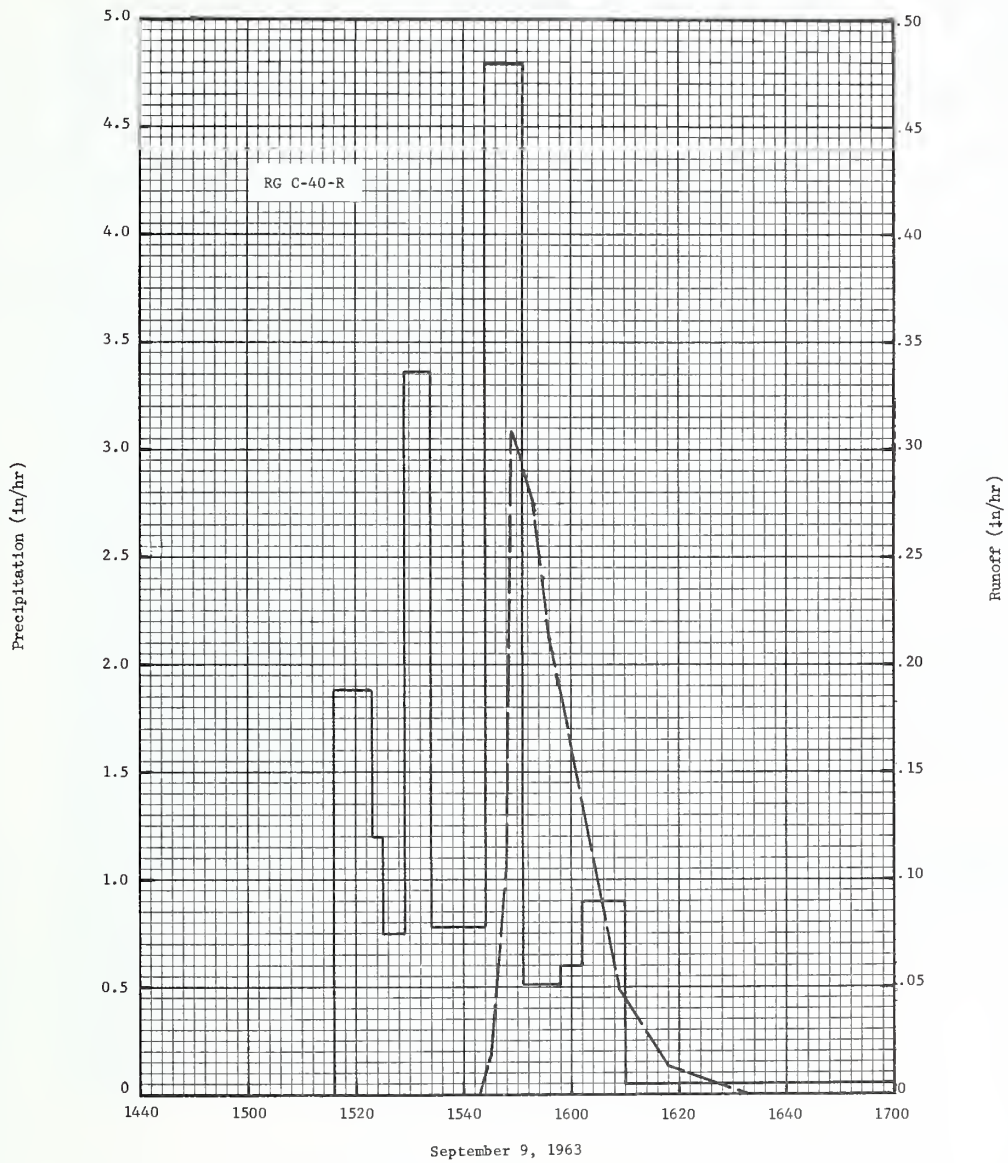
MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA AREA—3.74 ACRES						WATERSHED 18-H 44.22				
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	2/.32 .00	2/.00 T	2/1.52 .01	1.15 .00	.48 .00	4.23 .04	2.17 .00	2.32 .00	8.72 .38	1.60 .08	2/.30 .00	2/.13 .00	22.94 .51			
STA AV ³ /P (40-63) Q	.29 .02	.51 .03	1.21 .04	2.12 .06	3.85 .40	5.08 .90	2.97 .33	2.97 .16	2.78 .16	1.29 .06	.73 .02	.42 .00	24.22 2.18			
MEAN P 4/ 71 YR	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-9	.29	9-10	.14	9-10	.16	9-9	.28	9-9	.30	9-9	.30	9-9	.30	9-3	.31
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1963 2/	7-3 1959	2.42	7-3 1959	2.01E	7-3 1959	2.05E	6-1 1951	2.58	6-15 1957	2.71	6-15 1957	2.81	6-15 1957	3.57	6-10 1957	3.58
NOTES: Quality of records: Monthly P and Q, excellent to good, except Jan. 1 to April 1, which are good. Watershed conditions: heavily grazed pasture, poor to fair condition. 1/ Months of Jan., Feb., Mar., Apr., and Dec. may include snow and snow melt. 2/ Based on meteorological station records. 3/ Station records began August 1, 1939; part year records for 1939-1955 and no records for 1956, not included in station averages. 4/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr. 5/ No maximum discharges or flow volumes for 1955 and 1956.																
1963 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA						WATERSHED 18-H 44.22				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of September 10, 1963																
RG	RG B-39-R		9-10	RG	B-39-R		9-10	0115	.000	.00						
8-11	.46	.00		0104	.00	.01		0123	.008	T						
8-12	.05	.00		0117	.28	.07		0130	.006	T						
8-17	.07	.00		0124	1.55	.25		0135	.012	T						
8-18	.77	.00		0149	.22	.34		0155	.001	.01						
8-23	.20	.00		0207	.27	.42		0210	.036	.01						
8-27	.04	.00		0210	1.40	.49		0215	.078	.01						
9-1	1.80	.01		0223	.69	.64		0220	.088	.02						
9-4	.49	T		0232	1.07	.80		0233	.245	.06						
9-7	.10	.00		0236	.75	.85		0250	.140	.11						
9-9	6/ 2.13	7/ .14		0249	.14	.88		0310	.065	.14						
				0316	.07	.91		0330	.018	.16						
				0426	.01	.95		0350	.006	.16						
				0856	.01	.98		0415	.000	.16						
				1200	.01	1.02										
Watershed conditions: 100% pasture. Good stand, grazed short.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.771. FOR MAP OF AREA, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 44.22-4. 6/ RAINFALL FROM 0750 TO 1930. 7/ RUNOFF FROM 0800 TO 1800.																



September 10, 1963

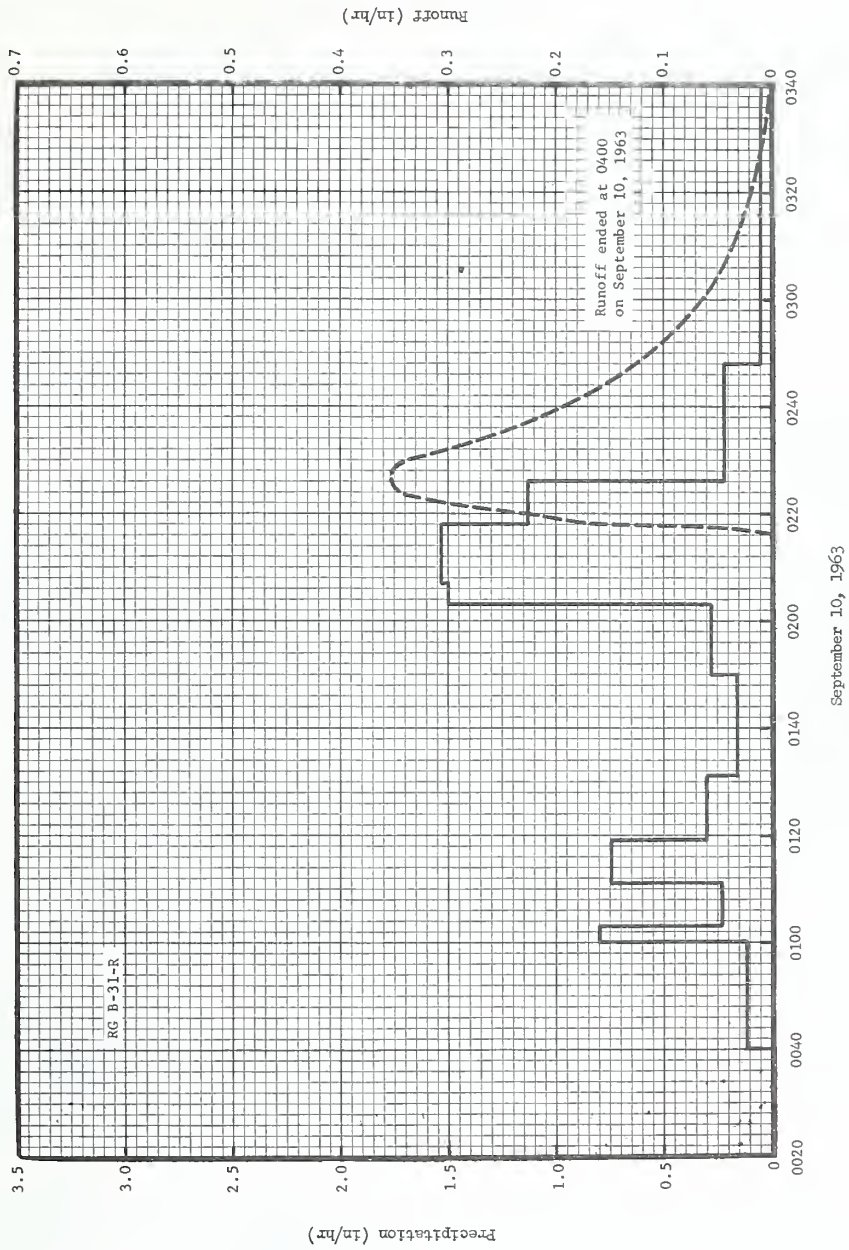
HASTINGS, NEBRASKA WATERSHED 18-H

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA								WATERSHED 22-H 44.26		
						AREA—3.83 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	2/.32 .00	2/.00 .00	2/1.52 .00	1.07 .00	.52 .00	4.05 .00	1.94 .00	2.25 .00	8.72 .22	1.41 T	.29 .00	2/.13E .00	22.22 .22			
STA AV 3/ P (62-63) Q						4.32 .02	3.74 .21	3.97 .59	5.78 .12	1.68 .04	.23 .00	.28 .00	— —			
MEAN P 4/ 71 YR	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-9	.31	9-10	.11	9-10	.12	9-9	.19	9-9	.19	9-9	.19	9-9	.19	9-9	.19
MAXIMUMS FOR PERIOD OF RECORD																
1962 TO 1963 3/	8-23 1962	3.18	8-23 1962	1.09	8-23 1962	1.10	8-23 1962	1.11	8-23 1962	1.11	8-23 1962	1.11	8-23 1962	1.11	8-23 1962	1.18
Notes: Quality of records: Monthly P and Q, excellent to good, except January 1 to April 1, which are good. Watershed conditions: no field operations and no yields. Grass height on Sept. 1, 1963 was an average of two feet. 1/ Rain gages C-40-R for April 11 through November 20; Meteorological station for Jan 1 through April 10 and Nov. 21 through Dec. 31. 2/ Months of Jan., Feb., Mar., and Dec. may include snow. 3/ Station averages and maximums undergrass began June 1, 1962; for comparative data under cultivation, 1941-54, see p. 44.26-1 of 1962 volume. 4/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1963 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA								WATERSHED 22-H 44.26		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of September 9, 1963																
	RG C-40-R		9-9	RG	C-40-R		9-9	1543	.000	.00						
8-11	.54	.00		1516	.00	.00		1545	.018	T						
8-17	.12	.00		1523	1.88	.22		1548	.106	T						
8-18	.72	.00		1525	1.20	.26		1549	.308	.01						
8-23	.32	.00		1529	.75	.31		1553	.275	.03						
8-27	.05	.00		1534	3.36	.59		1556	.212	.04						
9-1	1.80	.00		1544	.78	.72		1609	.049	.07						
9-4	.40	.00		1551	4.79	1.28		1618	.013	.07						
9-9	5/ .46	.00		1558	.51	1.34		1633	.000	.07						
				1602	.60	1.38										
				1610	.90	1.50										
				1714	.05	1.55										
Watershed conditions: 100% meadow. No operations. Average grass height of two feet on September 1.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.862. FOR CONTOUR MAP, SEE P. 44.26-3 OF 1962 VOLUME. 5/ RAINFALL FROM 0740 TO 1030																



HASTINGS, NEBRASKA WATERSHED 22-H

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA AREA—4.20 ACRES										WATERSHED 23-H 44.27	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963 P 1/ Q	2/.32 .00	2/.00 T	2/1.52 T	1.07 .00	.52 .00	4.05 T	1.94 .00	2.25 .00	8.72 .23	1.41 .00	.29 .00	2/.13E .00	22.22 .23				
STA AV 3/ (62-63) Q						4.32 .06	3.74 .33	3.97 .62	5.78 .12	1.68 .03	.23 .00	.28 .00	— —				
MEAN P 4/ 71 YR	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1962 5/ 1963	8-23	3.24	8-23	1.12	8-23	1.12	8-23	1.15	8-23	1.15	8-23	1.15	8-23	1.15	8-23	1.24	
	9-10	.35	9-10	.16	9-10	.16	9-10	.16	9-9	.21	9-9	.21	9-9	.21	9-9	.21	
MAXIMUMS FOR PERIOD OF RECORD																	
1962 TO 1963 3/ 1962	8-23	3.24	8-23	1.12	8-23	1.12	8-23	1.15	8-23	1.15	8-23	1.15	8-23	1.15	8-23	1.24	
NOTES: Quality of records: Monthly P and Q, excellent to good. Watershed conditions: Seeded to grass Oct. 20, 1961; grass clipped to 4 in. height on Aug. 10, 1962; no field operations and no yields in 1963; average grass height on September 1, 1963 was two feet at maturity. 1/ Rain gages C-40-R for April 11 through November 20; Meteorological station for Jan. 1 through April 10 and Nov. 21 through Dec. 31. 2/ Months of Jan., Feb., Mar., and Dec. may include snow. 3/ Station averages and maximums under grass cover began June 1, 1962; for comparative data under cultivation, 1941-54, see p. 44.27-1 of 1962 volume. 4/ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr. 5/ Maximum discharge for 8-23 and volumes for 1,2,6 and 12 hours and 1,2 and 8 days are revised and supersede those previously published in Ref. 6. (underlined items)																	
1963 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA WATERSHED 23-H 44.27											
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
Event of September 10, 1963																	
RG	C-40-R		9-10	RG	B-31-R		9-10	0216	.000	.00							
8-11	.54	.00		0040	.00	.00		0217	.029	T							
8-17	.12	.00		0100	.12	.04		0218	.156	T							
8-18	.72	.00		0103	.80	.08		0220	.224	.01							
8-23-	.32	.00		0111	.23	.11		0227	.354	.04							
8-27	.05	.00		0119	.75	.21		0239	.203	.10							
9-1	1.80	.00		0131	.30	.27		0255	.088	.14							
9-4	.40	.00		0150	.16	.32		0310	.037	.15							
9-9	6/2:03	.05		0203	.28	.38		0330	.007	.16							
				0207	1.50	.48		0400	.000	.16							
Watershed Conditions: 100% meadow, no operations. Average grass height of two feet on September 1.																	
			9-10	RG	C-40-R	7/ 1.11											
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4.235. FOR CONTOUR MAP OF AREA, SEE P. 44.27-3 OF 1962 VOLUME. 6/ RAINFALL FROM 0739 TO 1030 AND FROM 1515 TO 1711. 7/ CLOCK STOPPED, BUT THIS WAS TOTAL DEPTH.																	



HASTINGS, NEBRASKA WATERSHED 23-H

HASTINGS, NEBRASKA WATERSHED 25-H

LOCATION: Webster County, Nebraska; approximately 2 miles south of Rosemont; Little Blue River Watershed; Kansas River Basin.

AREA: 2.24 acres.

SLOPES:	Slope - Percent	0-3	3-7	3-10	Over 10	Soil Group
	Percent of Area	9	0	0	0	Holdrege silt loam
		0	0	91	0	Colby-Hobbs Complex

SOILS: Loessial, derived from gray wind-blown material consisting mostly of Peorian Loess.

Soil	Percent of Area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Perme-ability	Structure	Perme-ability	Avg. depth (in.)	Perme-ability	
Holdrege silt loam	90	12	Moderate fine to medium granular	Moderate	Moderate fine to medium subangular blocky	Moderate to moderately slow	34	Moderate	Medium
Colby-Hobbs Complex	10								
Colby silt loam 70%		6	Moderate fine granular	Moderate	Weak fine to medium subangular blocky	Moderate to moderately slow	12	Moderate to moder-ately slow	Medium
Hobbs silt loam 30%		30	Weak fine gran-ular or platy	Moderate	Weak fine gran-ular or platy	Moderate	36	Moderate	Medium

EROSION:	Erosion class	1	2	3
	Percent of area	100	0	0

LAND CAPABILITY:	Class	I	II	III	IV	V	VI
	Percent of area	0	9	0	91	0	0

GEOLOGY: The parent material of all the soils of the watershed, except the Nuckolls soils, is Peorian Loess which ranges up to 30 feet deep. Beneath the Peorian Loess, or exposed in the Nuckolls soils, is the loessial phase of the Loveland formation, which ranges up to 90 feet deep or more. The depth of the combined deposits is believed to be never less than 20 feet. Below the Loveland is the Ogallala formation, and under this is the Niobrara chalky shale. Most of the soils have deep friable topsoils in the native conditions, usually with a silt loam texture. Source of data: U. S. Soil Conservation Service "Hydrologic Data, Central Great Plains Experimental Watershed, Hastings, Nebraska." Hydrologic Bulletin No. 3, 148 pp., 1942. (Nuckolls soils are now called Geary soils)

SURFACE DRAINAGE: Good; length of principal waterway approximately 450 ft., a natural watershed with surface flow to a well-defined waterway; earth dike boundary.

CHARACTER OF FLOW: Ephemeral, continuous.

INSTRUMENTATION: Runoff; 2-foot, H-type flume, FW-1 recorder. Precipitation; recording raingage.

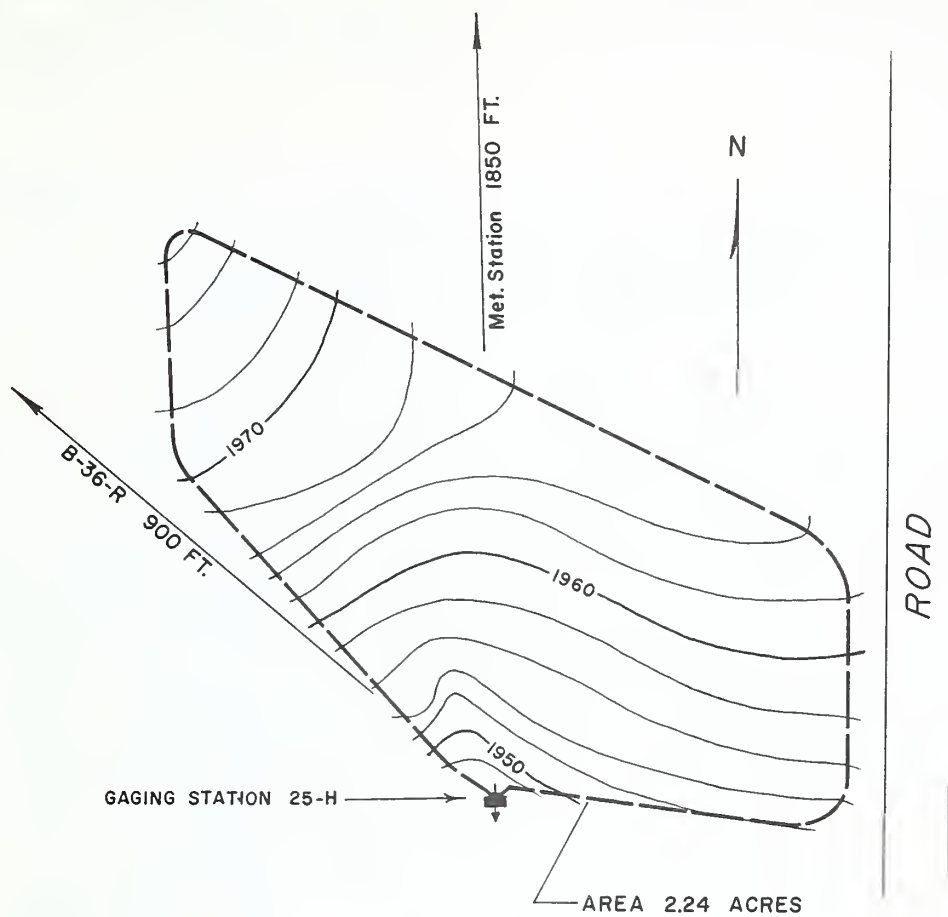
WATERSHED CONDITIONS: Native grass meadow consisting mostly of blue gramma, bluegrass and side oats gramma. 1963 grass was poor due to late start and lack of moisture. Vegetative cover estimates for period of record are:

Year	1963
Percent bare space	18%

GENERALLY REPRESENTS: South Central Nebraska and North Central Kansas. Land resource areas: (H-71), Central Nebraska Loess Hills; (H-73), Rolling Plains and Breaks; and (H-75), Central Loess Plains.

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA WATERSHED 25-H										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 $\frac{1}{P}$ Q					.51 .00	4.25 .01	2.16 .00	2.21 .00	8.27 .00	1.46 .00	2/ .30 .00	2/ .13 .00	19.29 .01			
STA AVG P Q																
MEAN P $\frac{3}{71}$ YR	.48	.77	1.19	2.28	3.35	4.27	3.20	2.68	2.68	1.40	.88	.63	23.81			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-25	.04	6-25	.01	6-25	.01	6-25	.01	6-25	.01	6-25	.01	6-25	.01	6-25	.01
MAXIMUMS FOR PERIOD OF RECORD $\frac{1}{1}$																
19	TO															
19																

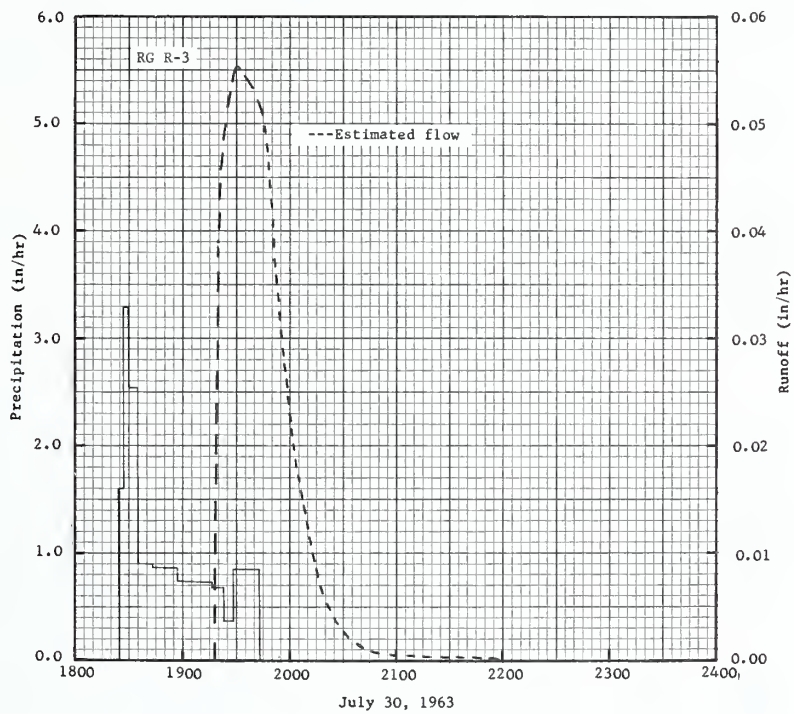
Notes: To convert runoff in in/hr to cfs, multiply by 2.259. $\frac{1}{1}$ Station records began April 26, 1963, using rain gage B-36-R. $\frac{2}{2}$ Based on meteorological station records. $\frac{3}{3}$ Mean P based on 71-yr (1893-1963) U.S. Weather Bureau record period at Red Cloud, Nebr.



HASTINGS, NEBRASKA

WATERSHED 25-H

MONTHLY PRECIPITATION AND RUNOFF (inches) 1/						SAFFORD, ARIZONA WATERSHED W-I AREA—519.3 ACRES								45.001		
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
YEAR																
P																
Q																
STA AVG P																
O																
MEAN 65 YR P2/	.66	.69	.64	.29	.14	.28	1.77	1.63	1.02	.66	.58	.70	9.06			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	7-30	.0552	7-30	.04E	7-30	.04E	7-30	.04E	7-30	.04E	7-30	.04E	7-30	.05E	7-30	.05E
MAXIMUMS FOR PERIOD OF RECORD 1/																
19	TO															
19																
<p>Quality of Q data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor (±15% of actual) for 1939-63. Watershed conditions: 85 percent of area is bare. Sparse vegetation is predominantly shrubs (creosotebush, snake-weed, and catclaw), with some short grasses (tobosa, three-awn, and curly mesquite). 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Mean P based on 65-yr (1899-1963) U.S. Weather Bureau record period at Safford, Ariz.</p> <p>GEOLOGY: About 90 percent of the drainage basin is developed on a Quaternary-Tertiary basalt of considerable but unknown thickness. In places, the surface of the basalt is overlain by a veneer of highly flocculated soil, which never exceeds depths of 24 inches. The grades of the channels are primarily controlled by the basalt, which varies in hardness and fracture patterns. The remaining 10 percent of the basin is covered by a deposit of calcareous granite wash of Quaternary age. It varies in depth from 0 to 75 feet and is underlain by the Quaternary-Tertiary basalt. The soil profile is poorly developed on the granite wash material. There are no known faults that might influence flow into or out of the catchment area. The only subsurface controls are those along the basalt-granite wash interface, where the irregular surface of the basalt retards subsurface flow. Source of data: Field reconnaissance by Project Staff.</p>																
1963 SELECTED RUNOFF EVENT						SAFFORD, ARIZONA WATERSHED W-I 45.001										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 30, 1963																
	RG R-3		7-30	RG	R-3		7-30									
7-7	.13	.00		1825	.00	.00		1918	.0000	.0000						
7-18	.44	.00		1828	1.60	.08		1919	.0267	.0002						
7-22	.56	.00		1830	3.30	.19		1920	.0414	.0008						
7-26	.10	.00		1835	2.52	.40		1921	.0464	.0015						
				1844	.90	.52		1925	.0514	.0048						
				1857	.87	.71		1930	.0552	.0092						
				1916	.72	.94		1935	.0542	.0138						
				1923	.68	1.02		1940	.0533	.0183						
				1928	.36	1.05		1945	.0504	.0226						
				1943	.84	1.26		1950	.0405E	.0264E						
								1955	.0315E	.0294E						
								2000	.0237E	.0317E						
								2005	.0172E	.0334E						
								2010	.0123E	.0346E						
								2015	.0083E	.0355E						
								2020	.0062E	.0361E						
								2025	.0044E	.0365E						
								2030	.0030E	.0368E						
								2040	.0018E	.0372E						
								2050	.0009E	.0374E						
								2100	.0004E	.0375E						
								2115	.0002E	.0376E						
								2130	.0001E	.0376E						
								2145	TE	.0376E						
								2155	.0000E	.0376E						
<p>Watershed conditions: Area is 85 percent bare. Sparse vegetation is predominantly shrubs (creosotebush, snakeweed, and catclaw), with some short grasses (tobosa, three-awn, and curly mesquite).</p>																
<p>NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 523.32. FOR TOPOGRAPHIC MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 45.1-4 (REPRINTED). REPORTS FOR WATERSHEDS W-II (45.2) AND W-IV (45.3) AT SAFFORD WITHHELD FOR 1963, PENDING RE-EVALUATION.</p>																



SAFFORD, ARIZONA WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches) 1/						SAFFORD, ARIZONA WATERSHED W-V AREA—723 ACRES (1.13 SQ. MILES)						45.005	
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
YEAR													
P													
O													
STA AVG P													
O													
MEAN P													
65 YR	.66	.69	.64	.29	.14	.28	1.77	1.63	1.02	.66	.58	.70	9.06

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-6	.0745	8-6	.0537E	8-6	.0586E	8-5	.0588E	8-5	.0588E	8-5	.0588E	8-5	.0588E	8-3	.0831E

MAXIMUMS FOR PERIOD OF RECORD 1/													
19	TO												
19													

NOTES: Quality of Q data: (Revision) Re-evaluation of runoff records indicates accuracy should be reduced to poor (+15% of actual) for 1939-63. Watershed conditions: About 80 percent of area is bare. Vegetation consists mostly of short grasses (black grama, sideoats grama, and tobosa), with some shrubs and forbs. 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Mean P based on 65-yr (1899-1963) U.S. Weather Bureau record period at Safford, Ariz.

GEOLOGY: Tertiary-age andesite composes 100 percent of the bedrock on this watershed. At various places where it is visible in the trunk stream, it retards the channel development and exerts a marked control on slope of the channel proper. About 10 to 15 percent of the bedrock is covered by alluvium of various ages. The oldest alluvium deposit is quite restricted in extent and probably represents a deformed gravel of Miocene-Pliocene age. In the main, channel several paleosoils are exposed of probable Pleitocene age. These are all overlain by a fairly recent soil on the flood plain of the main channel, while the hillside slopes show practically no soil development at all. Although the watershed is developed entirely on the Tertiary andesite and no structural features are recognized thereon, the preimeter of the andesite block is rimmed by faults where considerable fracturing in the bedrock is noted. Depth of bedrock is not known. Source of Data: Field reconnaissance by project staff.

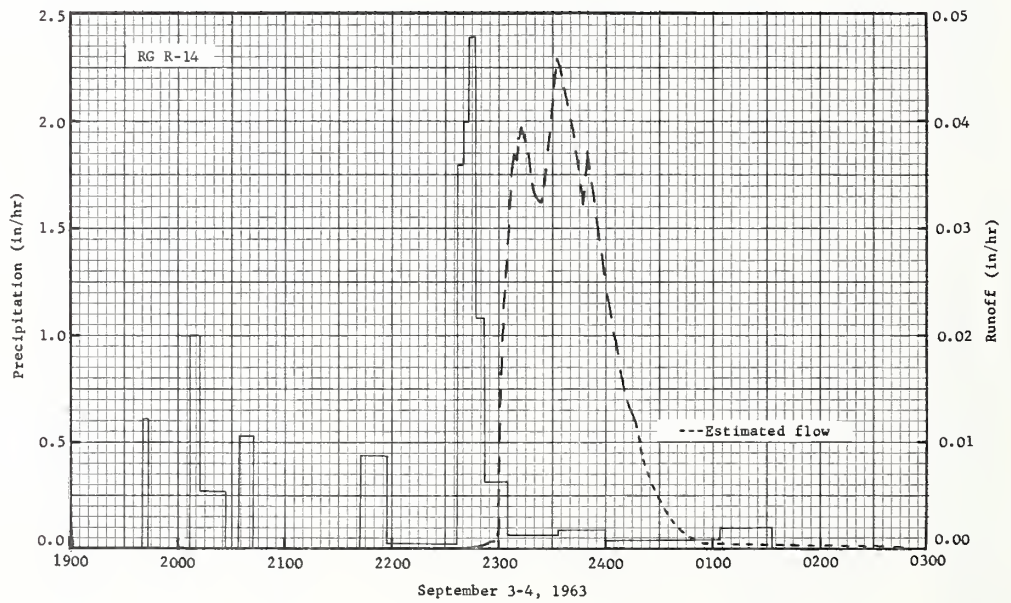
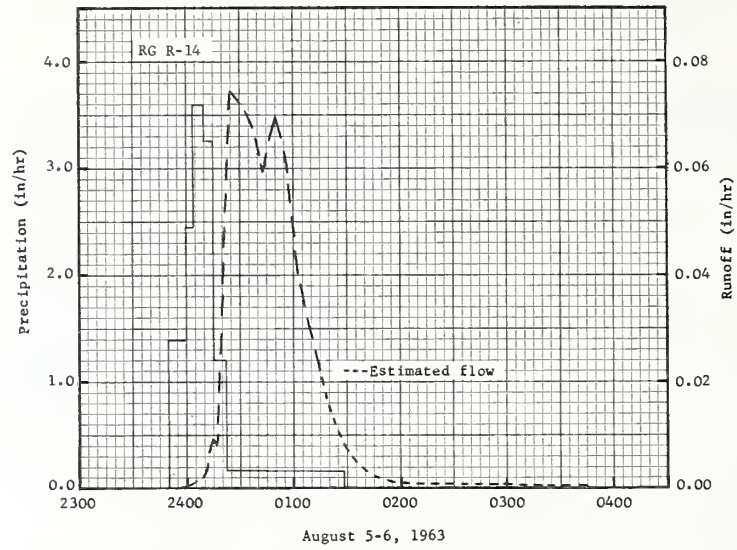
1963 SELECTED RUNOFF EVENTS						SAFFORD, ARIZONA WATERSHED W-V						45.005	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
Event of August 5-6, 1963													
	RG R-14		8-5	RG	R-14		8-5						
7-5	.25	.00		2350	.00	.00		2355	.0000	.0000			
7-7	.08	.00		2400	1.44	.24		2400	.0002	T			
7-18	.04	.00	8-6	0005	2.40	.44	8-6	0005	.0011	T			
7-22	.05	.00		0010	3.60	.74		0010	.0025	.0001			
7-26	.05	.00		0015	3.24	1.01		0011	.0036	.0001			
8-1	.10	.00		0022	1.20	1.15		0012	.0052	.0002			
8-2	.18	.00		0128	.17	1.31		0013	.0067	.0003			
8-3	.77	.0150						0014	.0086	.0004			
8-4	.19	.00						0015	.0090	.0005			
								0016	.0086	.0006			
								0017	.0086	.0007			
								0018	.0242	.0009			
								0019	.0275	.0013			
								0020	.0351	.0018			
								0021	.0436	.0025			
								0023	.0633	.0045			
								0025	.0745	.0068			
								0028	.0721	.0105			
								0034	.0699	.0176			
								0040	.0633	.0243			
								0043	.0592	.0274			
								0045	.0633	.0295			
								0050	.0699	.0351			
								0055	.0633	.0407			
								0100	.0477	.0453			
								0105	.0364	.0488			
								0110	.0282	.0515			
								0115	.0226	.0536			
								0118	.0174E	.0546E			

Continued on next page

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 729.02. FOR TOPOGRAPHIC MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA, MISC. PUB. 945, P. 45.4-4. REPORTS FOR FOREGOING WATERSHEDS W-II (45.2) AND W-IV (45.3) AT SAFFORD WITHHELD FOR 1963, PENDING RE-EVALUATION.

1963 SELECTED RUNOFF EVENTS						SAFFORD, ARIZONA WATERSHED W-V 45.005				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of August 5-6, 1963 Continued							8-6			
								0121	.0141 E	.0554E
								0124	.0113 E	.0560E
								0128	.0086 E	.0567E
								0133	.0062 E	.0573E
								0138	.0042 E	.0577E
								0143	.0030 E	.0580E
								0148	.0022 E	.0582E
								0153	.0015 E	.0584E
								0158	.0011 E	.0585E
								0208	.0005 E	.0586E
								0218	.0003 E	.0587E
								0228	.0001 E	.0587E
								0241	.0001 E	.0587E
								0253	TE	.0587E
								0308	TE	.0587E
								0321	TE	.0587E
								0348	.000E	.0588E
Event of September 3-4, 1963										
RG R-12			9-3	RG	R-12		9-3			
8-3	1.16	.0150		1948	.00	.00		2243	.0000	.0000
8-5	.93	.0588		2013	.02	.01		2249	.0000	.0000
8-5	.38	.0000		2017	1.95	.14		2255	.0003	T
8-10	.75	.0105		2025	.00	.14		2256	.0007	T
8-16	.06	.0000		2034	.87	.27		2258	.0006	T
8-19	.08	.0000		2038	.00	.27		2259	.0016	T
8-21	1.13	.0000		2046	.75	.37		2300	.0110	.0001
8-22	.23	.0000		2148	.02	.39		2301	.0141	.0003
8-23	.37	.0110		2220	.60	.49		2304	.0237	.0012
8-25	.25	.0043		2228	.00	.49		2306	.0323	.0021
8-26	.69	.0425		2236	2.25	.64		2308	.0371	.0033
8-27	.10	.0000		2252	1.44	.76		2310	.0364	.0045
				2302	.12	.78		2311	.0378	.0051
				2308	1.10	.89		2312	.0395	.0057
				2330	.08	.92		2316	.0378	.0083
				2400	.10	.97		2318	.0337	.0095
			9-4	0052	.02	.99		2324	.0323	.0128
				0132	.08	1.04		2326	.0364	.0139
								2332	.0460	.0180
RG R-14			9-3	RG	R-14		9-4			
8-3	0.93	.0150		1940	.00	.00		2341	.0378	.0243
8-4	.19	.00		1943	.60	.03		2346	.0323	.0272
8-5	1.77	.0588		2006	.00	.03		2349	.0371	.0289
8-7	.23	.00		2012	1.00	.13		0001	.0237	.0350
								0011	.0141	.0382
8-10	.12	.01		2026	.26	.19		0017	.0113	.0395
8-15	.10	.00		2034	.00	.19		0021	.0086 E	.0402E
8-16	.05	.00		2042	.53	.26		0026	.0062 E	.0408E
8-19	.03	.00		2142	.00	.26		0036	.0030 E	.0416E
8-20	.45	.00		2157	.44	.37		0046	.0015 E	.0420E
8-21	.27	.00		2236	.02	.38		0056	.0007 E	.0422E
8-22	.23	.00		2239	1.80	.47		0106	.0004 E	.0423E
8-23	.50	.01		2242	2.00	.57		0117	.0002 E	.0423E
8-25	.34	.0043		2246	2.40	.73		0134	.0001 E	.0423E
8-26	.40	.04		2251	1.08	.82		0156	TE	.0423E
8-27	.10	.00		2304	.32	.89		0214	TE	.0423E
				2333	.06	.92		0241	.0000 E	.0423E
				2400	.09	.96				
			9-4	0103	.04	1.00				
				0133	.12	1.06				
Watershed conditions: Area is about 80 percent bare. Vegetation consists mostly of short grasses (black grama, side-oats grama, and tobosa), with some shrubs and forbs.										
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 729.02.										

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 729.02.



MONTHLY PRECIPITATION AND RUNOFF (inches) <u>1/</u>							ALBUQUERQUE, NEW MEXICO WATERSHED W-II AREA — 40.5 ACRES							47.002
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
P														
Q														
STA AVG P														
Q														
MEAN <u>P2/</u>														
72 YR	.37	.33	.40	.57	.65	.57	1.41	1.28	.88	.80	.43	.45	8.14	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-5	.1051	9-5	.0305	9-5	.0306E	9-5	.0306E	9-5	.0306E	9-5	.0306E	9-5	.0306E	9-5	.0306E

MAXIMUMS FOR PERIOD OF RECORD <u>1/</u>														
19	TO													
19														

NOTES: Quality of Q data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor ($\pm 15\%$ of actual) for 1939-63. Watershed Conditions: Sparsely vegetated rangeland; about 80 percent of the area is bare. Vegetation consists of short grasses (blue and black grama, and galleta) and shrubs (sagebrush, saltbush, and rabbit brush). Vegetation is densest along lower two thirds of principal waterway. 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Mean P based on 72-yr (1892-1963) U. S. Weather Bureau record period at Albuquerque, N. Mex.

SLOPES:

Slope - Percent	0-3	3-10	10-35
Percent of area	0	64	36

SOILS: (Revision) Aeolian and residual; derived from sandstone and shale.

Soil	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability	
Billings clay loam	49	4	Weak fine angular blocky	Slow	Weak coarse subangular blocky	Slow	20	Slow	Slow
Persayo silty clay loam (severely eroded)	36	0	-	-	Strong fine angular blocky	Very slow	24	Very <u>1/</u> slow	Very slow
Chacra sandy clay loam (severely eroded)	10	0	-	-	Moderate medium angular blocky	Moderately slow	20	Slow	Slow
Chacra loam	5	6	Weak coarse platy	Moderate	Moderate medium angular blocky	Moderately slow	24	Slow	Slow

1/ Soft Shale

EROSION:

Erosion class	1	2	3
Percent of area	0	54	46

LAND CAPABILITY:

Class	VII
Percent of area	100

GEOLOGY: The sandy shales of this watershed dip about 6° to the East and strike N 1°E. They are of Late Jurassic age and are the fine grained unconsolidated equivalents of the Late Jurassic sandstones on Watershed W-I. The strata here have been filled by small normal faults immediately to the North with displacements in the neighborhood of 150 to 200 feet. Soil development on the fine sandy shale is good. Depth varies from 12 inches to 60 inches. Subsurface flow may occur, but further field geologic and soil surveys must be made before the actual situation can be determined. As an estimate, most of the outflow from the watershed is surface runoff and is measured by the weir. No structural features are noted on the watershed proper.

Source of data: Field reconnaissance by Project Staff.

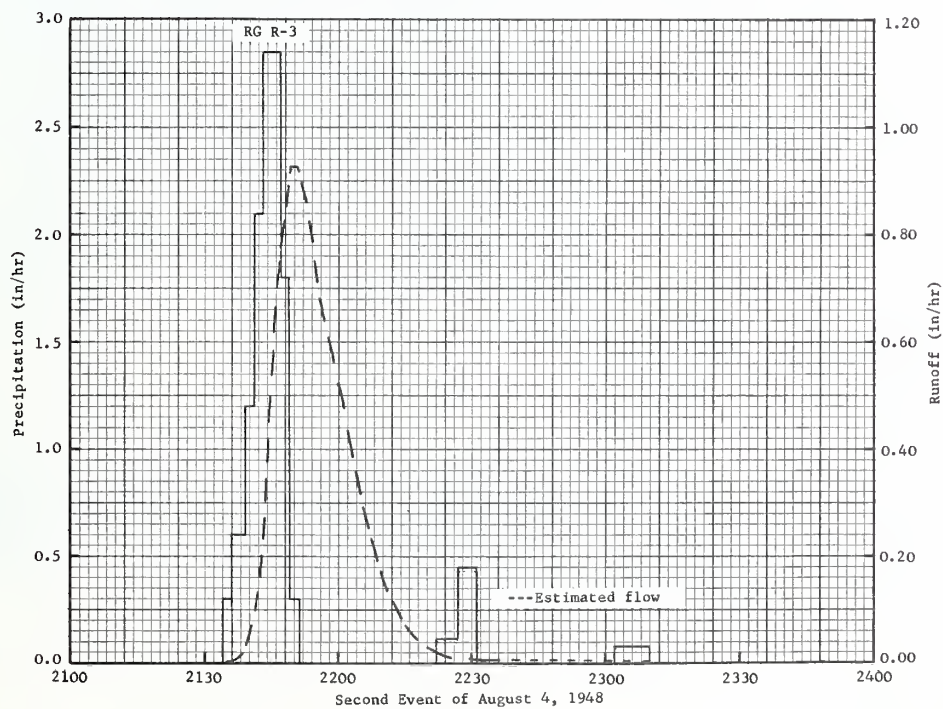
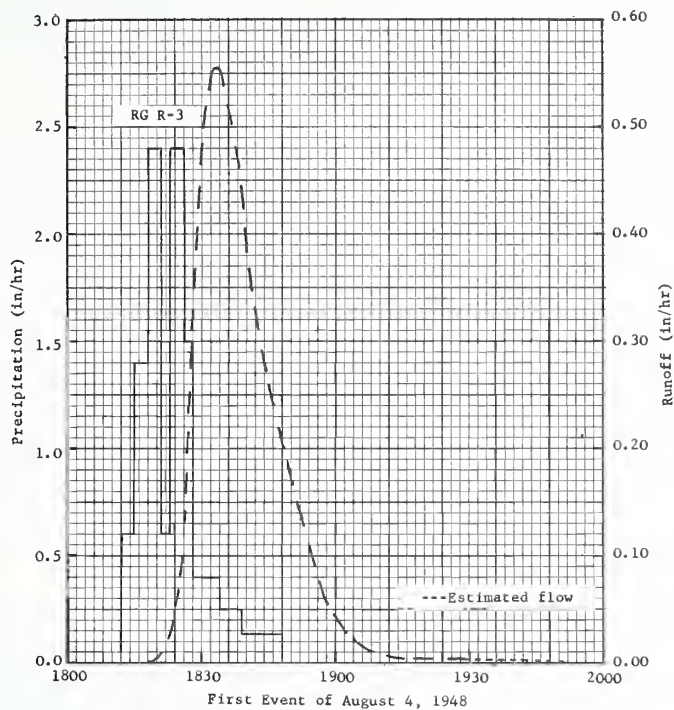
GENERALLY REPRESENTS: (Revision) Rio Grande Valley problem area (F10) changed to Southern Desertic Basins, Plains and Mountains land resource area (D-42).

SPECIAL NOTE: THE DRAINAGE AREA OF PRECEDING WATERSHED W-I IS IN QUESTION SINCE 1945 AND IS LARGER THAN REPORTED FOR 1946-62. RUNOFF RECORDS AND SELECTED EVENTS PREVIOUSLY PUBLISHED FOR THIS PERIOD SHOULD BE DISREGARDED UNTIL A POSSIBLE RE-EVALUATION CAN BE MADE AND REPORTED. THE 1963 DATA ARE THEREFORE WITHHELD.

1948 SELECTED RUNOFF EVENTS			ALBUQUERQUE, NEW MEXICO			WATERSHED W-II			47.002
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
<u>First Event of August 4, 1948</u>									
	RG R-3		8-4	RG	R-3		8-4		
7-18	.04	.00	1812		.00	.00	1818	.0000	.0000
7-20	.26	.00	1815		.60	.03	1819	.0019	T
7-23	.08	.00	1818		1.40	.10	1820	.0037	T
8-3	.08	.00	1821		2.40	.22	1821	.0098	.0001
8-4	1/ .17	.00	1823		.60	.24	1822	.0176	.0003
			1826		2.40	.36	1823	.0336	.0007
			1828		1.50	.41	1824	.0515	.0014
			1834		.40	.45	1825	.0740	.0024
			1839		.24	.47	1826	.1269	.0041
			1848		.13	.49	1827	.2075	.0069
							1828	.3014	.0111
							1829	.3920	.0169
							1830	.4753	.0241
							1831	.5194	.0324
							1832	.5366	.0412
							1833	.5537	.0503
							1834	.5537	.0595
							1836	.5194	.0774
							1840	.3847	.1075
							1845	.2622	.1345
							1850	.1737	.1527
							1855	.0924	.1638
							1900	.0429	.1694
							1905	.0188	.1720
							1910	.0090	.1732
							1915	.0041	.1737
							1921	.0019	.1740
							1929	.0006E	.1742E
							1935	.0002E	.1742E
							1940	.0001E	.1742E
							1950	.0000E	.1742E
<u>Second Event of August 4, 1948</u>									
	RG R-3		8-4	RG	R-3		8-4		
7-18	.04	.00	2134		.00	.00	2135	.0000	.0000
7-20	.26	.00	2136		.30	.01	2136	.0010	T
7-23	.08	.00	2139		.60	.04	2137	.0057	.0001
8-3	.08	.00	2141		1.20	.08	2138	.0098	.0002
8-4	2/ .17	.00	2143		2.10	.15	2139	.0336	.0006
8-4	2/ .49	.17	2147		2.85	.34	2140	.0608	.0014
			2149		1.80	.40	2141	.0892	.0027
			2151		.30	.41	2142	.1387	.0046
			2222		.00	.41	2143	.2450	.0078
			2227		.12	.42	2144	.4018	.0132
			2231		.45	.45	2145	.5537	.0212
			2302		.00	.45	2146	.6615	.0313
			2310		.08	.46	2147	.7742	.0433
							2148	.8747	.0571
							2149	.9237	.0721
							2150	.9237	.0875
							2151	.8967	.1027
							2155	.7179	.1565
							2200	.5194	.2081
							2203	.3847	.2307
							2206	.2744	.2472
							2210	.1595	.2617
							2215	.0740	.2714
							2220	.0336	.2759
							2225	.0165	.2780
							2230	.0090	.2791
							2235	.0052	.2797
							2240	.0025E	.2800E
							2245	.0012E	.2802E
							2250	.0005E	.2803E
							2255	.0002E	.2803E
							2309	.0000E	.2803E
<p>Watershed conditions: The area was 80% bare: Vegetation consisted of short grasses (blue and black grama, and galleta) and shrubs (sagebrush, saltbush, and rabbit brush). Vegetation is densest along lower two thirds of principal waterway.</p>									

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 40.837. FOR TOPOGRAPHIC MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 47.2-4.

1/ PRIOR TO 1812; 2/ PRIOR TO 2134



ALBUQUERQUE, NEW MEXICO WATERSHED W-II

MONTHLY PRECIPITATION AND RUNOFF (inches) <u>1/</u>						ALBUQUERQUE, NEW MEXICO WATERSHED W-III 47.003 AREA - 168.3 ACRES							
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
YEAR													
P													
O													
STA AVG P													
MEAN <u>P₂</u>	.37	.33	.40	.57	.65	.57	1.41	1.28	.88	.80	.43	.45	8.14

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		6 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	10-19	.0005	10-19	.0001	10-19	.0001	10-19	.0001	10-19	.0001	10-19	.0001	10-19	.0001	10-19	.0001

MAXIMUMS FOR PERIOD OF RECORD <u>1/</u>														
19	TO													
19														

NOTES: Quality of Q data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor ($\pm 15\%$ of actual) for 1939-63. Watershed conditions: Sparsely vegetated rangeland; about 75 percent of area is bare. Vegetation consists of short grasses (blue and black grama and galleta), and shrubs (sagebrush, saltbush, and snakeweed). Vegetation is comparatively heavy in a narrow strip along the principal waterway. 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Mean P based on 72-yr (1892-63) U. S. Weather Bureau record period at Albuquerque, N. Mex.

SLOPES:	Slope-Percent	0-3	3-10	10-35
	Percent of area	18	64	18

SOILS: (Revision) Aeolian and residual derived from sandstone and shale.

Soil	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability	
Chacra loam	46	5	Weak fine sub- angular blocky	Moderate	Moderate medium subangular blocky	Moderately Slow	26	Slow <u>1/</u>	Slow
Canoncito clay loam	23	3	Weak fine angular blocky	Slow	Moderate medium angular blocky	Slow	35	Very <u>2/</u> slow	Very slow
Billings silt loam	18	7	Weak fine angular blocky	Slow	Weak coarse sub- angular blocky	Slow	48	Slow	Slow
Persayo silt loam	13	0	-	-	Moderate fine angular blocky	Slow	24	Very <u>3/</u> slow	Very slow

1/ Loamstone 2/ Sandstone and thin shale 3/ Soft shale

EROSION:	Erosion class	1	2	3
	Percent of area	0	87	13

LAND CAPABILITY:	Class	VII
	Percent of area	100

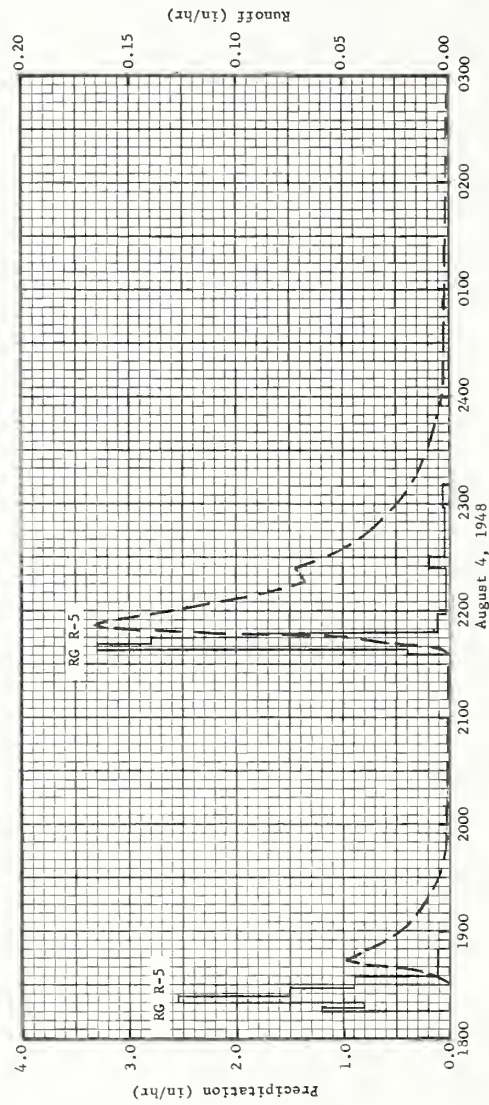
GEOLOGY: The fine grained silty sandstone upon which the watershed has developed is of upper Jurassic age. The beds are highly gypsiferous and cross-bedded in places. They dip 6° to the East and strike N 10° E. The thickness is not known but it is believed to be in the neighborhood of 250 ft. The high infiltration capacity of the silty material accounts for the facts that runoff is far below normal and drainage density is extremely low. No structural features are noted on the watershed although small normal faults occur a short distance to the north. Subsurface flow may occur, but further field geologic and soil surveys must be made before the actual situation can be determined. As an estimate, most of the outflow from the watershed is surface runoff and is measured by the weir. Soil development is poor on the ridges, being mostly less than a foot while on the swales it reaches depths of 30 to 60 inches.

Source of data: Field reconnaissance by Project Staff.

GENERALLY REPRESENTS: (Revision) Rio Grande Valley problem area (F10) changed to Southern Desertic Basins, Plains and Mountains land resource area (D-42).

1948 SELECTED RUNOFF EVENTS			ALBUQUERQUE, NEW MEXICO				WATERSHED W-III 47.003			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of August 4, 1948										
	RG R-5		8-4	RG	R-5		8-4			
7-18	.04	.00		1815	.00	.00		1831	.0000	.0000
7-20	.25	.00		1817	1.20	.04		1832	.0001	T
8-3	.11	.00		1820	.80	.08		1833	.0053	T
8-4	1/ .11	.00		1824	2.55	.25		1834	.0086	.0001
				1826	1.50	.30		1835	.0109	.0003
				1828	1.50	.35		1837	.0129	.0007
				1830	.90	.38		1838	.0164	.0009
				1834	.90	.44		1839	.0255	.0013
				1850	.11	.47		1840	.0344	.0018
	RG R-5		8-4	RG	R-5			1842	.0435	.0031
7-18	.04	.00		2135	.00	.00		1844	.0484	.0046
7-20	.25	.00		2138	.40	.02		1845	.0484	.0054
8-3	.11	.00		2140	3.30	.13		1848	.0435	.0077
8-4	2/ .11	.00		2142	3.30	.24		1850	.0395	.0091
				2145	2.80	.38		1855	.0299	.0120
8-4	2/ .47	.0228		2147	1.80	.44		1900	.0233	.0142
				2158	.11	.46		1905	.0191	.0160
				2224	.02	.47		1915	.0129	.0187
				2230	.20	.49		1925	.0074	.0204
				2258	.04	.51		1935	.0042	.0214
				2311	.05	.52		1945	.0022	.0219
								1955	.0013	.0222
								2046	.0001	.0228
								2131	3/ .0000	.0228
Watershed conditions: Sparsely vegetated rangeland; about 75 percent of area is bare. Vegetation consists of short grasses (blue and black grama and galleta), and shrubs (sagebrush, saltbush, and snakeweed). Vegetation is comparatively heavy in a narrow strip along the principal waterway.								2136	T	.0228
								2139	.0007	.0228
								2141	.0176	.0231
								2142	.0290	.0235
								2145	.0448	.0253
								2146	.0695	.0263
								2147	.1113	.0278
								2150	.1613	.0346
								2152	.1662	.0401
								2156	.1488	.0506
								2202	.1233	.0642
								2211	.0853	.0798
								2216	.0684	.0862
								2219	.0695	.0896
								2223	.0728	.0943
								2227	.0668	.0990
								2236	.0496	.1077
								2246	.0364	.1149
								2301	.0255	.1227
								2316	.0164	.1279
								2336	.0091	.1322
								2356	.0039	.1344
							8-5	0011	.0020	.1352
								0051	.0004	.1360
								0146	T	.1362
								0249	.0000	.1362

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 169.40. FOR TOPOGRAPHIC MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. 1956-59, USDA MISC. PUB. 945, P 47.3-4. 1/ PRIOR TO 1815; 2/ PRIOR TO 2135. 3/ FLOW CEASED, THEN RESUMED IMMEDIATELY.



ALBUQUERQUE, NEW MEXICO WATERSHED W-III

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI AREA—2,000 ACRES (3.13 SQ. MILES)						WATERSHED W-4 ^{1/}		62.01
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 P ^{2/}	1.15	2.70	3.73	4.29	4.55	1.56	6.17	4.53	2.24	.10	5.70	4.15	40.87	
Q	.00	.02	.14	.01	.29	.00	.10	.47	.24	.00	.27	.32	1.86	
STA AV ^{3/} P	3.84	4.91	4.34	4.38	3.80	3.81	4.40	3.00	4.85	2.28	5.00	4.50	49.11	
(57-63) Q	.79	1.03	.49	.44	.26	.15	.15	.13	.34	.09	.53	.49	4.89	
MEAN P 4/	5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09	
44 YR														

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS														
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL											
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-29	.28	8-29	.23	8-29	.35	8-29	.45	8-29	.46	8-29	.46	8-29	.46

MAXIMUMS FOR PERIOD OF RECORD														
19 57 TO	2-23	.84	2-23	.72	2-23	1.13	2-23	1.46	2-23	1.60	1-31	2.38	1-30	3.34
19 63	1962		1962		1962		1962		1962		1957		1957	3.90

NOTES: Watershed conditions: About 22% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 42% in pasture and idle land, good cover April to October with fair cover remainder of year; 34% in woods; 2% in bare gullies. 1/ About 28% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 7, 8, and 18. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.

1963 DAILY AIR TEMPERATURE (degrees F)										OXFORD, MISSISSIPPI										WATERSHED W-4				62.01	
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
1	55	24	43	23	59	38	85	54	65	37	84	64	89	68	89	68	86	56	73	38	79	48	51	21	
2	57	26	64	36	59	27	85	53	65	37	84	58	89	70	94	71	87	57	81	40	55	25	57	23	
3	58	25	64	14	58	29	84	61	73	45	83	56	90	70	94	68	91	67	82	51	58	23	50	27	
4	61	26	35	15	71	45	81	53	76	51	85	57	95	70	95	71	94	69	89	46	64	27	50	27	
5	58	37	46	22	80	60	64	48	82	57	87	64	91	68	95	70	80	69	85	43	55	45	53	26	
6	50	44	63	26	64	32	68	47	85	60	90	65	95	72	95	72	88	65	88	45	68	52	59	26	
7	45	35	70	26	53	28	53	42	80	57	92	67	93	74	94	71	85	60	84	46	69	40	63	34	
8	42	24	41	34	59	30	73	44	85	57	93	68	92	69	95	68	85	58	85	46	69	41	65	35	
9	55	24	38	29	67	29	78	46	87	66	94	68	87	67	91	66	87	59	90	48	69	41	47	32	
10	66	36	52	31	59	30	79	50	84	69	95	74	82	55	93	67	90	61	85	48	62	33	43	21	
11	74	53	44	26	67	31	70	50	85	70	93	69	82	52	91	69	90	67	86	55	74	34	50	21	
12	61	33	32	21	69	58	74	49	89	66	88	60	85	58	91	70	90	69	90	59	70	29	46	34	
13	33	10	32	20	79	41	69	38	88	69	90	64	91	67	90	74	87	65	91	54	59	27	35	30	
14	21	6	48	27	72	41	67	37	85	70	94	72	87	71	88	61	72	60	91	59	47	19	32	22	
15	35	6	42	18	52	31	70	40	86	64	95	74	81	67	80	50	73	60	88	62	53	19	28	11	
16	43	9	38	18	56	31	74	51	86	63	86	68	80	69	81	50	78	65	83	50	60	22	32	14	
17	57	13	44	19	73	44	84	63	88	69	80	66	87	70	86	55	81	63	82	50	72	43	33	12	
18	53	31	53	25	79	53	83	63	82	56	81	59	87	70	88	59	85	64	84	46	76	54	39	13	
19	60	35	50	26	80	60	82	64	83	53	85	63	92	71	90	64	90	56	83	43	62	52	34	7	
20	50	19	54	34	79	44	78	48	85	58	85	69	90	74	89	70	89	54	84	43	76	53	35	8	
21	26	13	59	19	61	36	82	53	75	57	82	68	93	67	84	63	88	54	85	42	66	58	29	12	
22	37	11	25	6	51	25	85	68	79	54	76	68	87	64	89	64	90	56	86	42	72	61	26	12	
23	58	15	35	7	58	27	84	57	64	42	80	65	88	68	92	62	81	53	87	45	72	42	21	15	
24	15	-3	50	24	71	31	65	42	69	43	81	68	87	66	95	67	80	49	85	54	49	28	25	42	
25	21	-2	49	30	76	48	67	46	78	53	81	66	85	67	95	71	76	44	75	53	58	32	34	40	
26	32	8	64	26	71	49	59	48	71	62	85	62	84	67	90	71	80	49	78	50	63	36	50	16	
27	33	9	32	15	63	33	72	53	76	62	83	67	85	70	95	72	80	55	83	50	60	41	53	30	
28	18	5	57	18	74	34	62	56	81	62	82	65	85	67	94	73	76	62	85	56	68	41	45	26	
29	53	4	---	---	80	50	78	61	77	61	85	66	87	69	95	71	79	56	72	35	54	35	41	22	
30	40	30	---	---	84	54	80	58	80	55	90	66	86	69	80	68	62	38	62	27	49	32	44	20	
31	39	22	---	---	84	58	---	---	78	55	---	---	90	71	85	57	---	---	69	31	---	---	---	30	17
AV.	45	20	47	23	68	40	74	51	80	57	86	66	88	68	90	66	83	59	83	47	64	38	42	22	
MEAN	32.8		35.0		53.8		63.0		68.5		75.9		77.7		78.3		71.0		65.0		50.7		32.2		
STA AV	48.28		54.34		60.38		72.50		81.58		86.65		90.68		90.67		84.62		75.50		62.39		50.30		

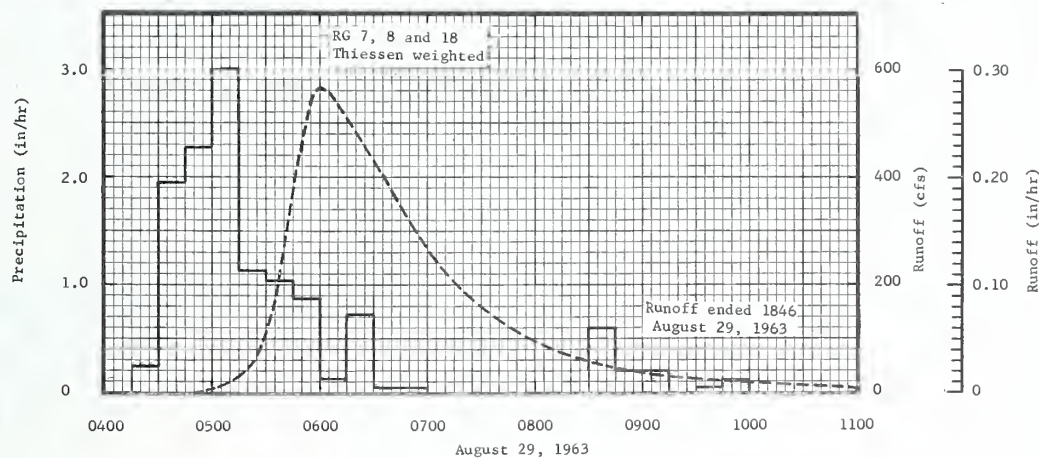
NOTES: TEMPERATURE DATA FROM U. S. WEATHER BUREAU STATION AT HOLLY SPRINGS 2N, MISS. STATION AVERAGE BASED ON 7-YR RECORD PERIOD, JAN. 1957 THROUGH DEC. 1963.

1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI							WATERSHED W-04	62.01
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	.87	.00	.00	.00	.00	.00	.00	.00	.39	.00		
2	.00	.30	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00		
3	.00	.00	.00	.00	.00	.00	.73	.00	.15	.00	.00	.00		
4	.00	.00	.35	.00	.00	.00	.00	.00	2.05	.00	.15	.00		
5	.19	.00	.63	.14	.61	.00	.00	.00	.00	.00	1.00	.00		
6	.00	.00	.00	1.13	.06	.00	.03	.00	.00	.00	.00	.00		
7	.00	.00	.00	.00	.00	.00	.39	.08	.00	.00	.00	.45		
8	.00	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00	.00		
9	.00	.00	.18	.00	.00	.00	.00	.00	.00	.00	.00	.00		
10	.00	1.56	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.58		
11	.31	.13	1.17	.00	.00	.00	.00	.40	.00	.00	.00	1.08		
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
13	.00	.00	.00	.00	.00	.00	1.41	.00	.00	.00	.00	.00		
14	.00	.00	.00	.00	.02	.00	.40	.00	.00	.00	.00	.00		
15	.00	.00	.40	.00	.00	.21	.09	.00	.00	.00	.00	.00		
16	.00	.00	.13	.00	.00	.38	.00	.00	.00	.00	.00	.00		
17	.00	.00	.00	.00	.00	.00	.39	.00	.00	.00	.00	.00		
18	.00	.31	.00	.00	.00	.00	.48	.00	.00	.00	.10	.00		
19	.07	.10	.00	.19	.00	.20	.00	.02	.00	.00	.00	.00		
20	.00	.00	.00	.00	.00	.07	1.03	.09	.00	.00	2.59	.00		
21	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00		
22	.00	.00	.00	.00	.06	.07	.00	.00	.00	.00	.98	1.045		
23	.04	.07	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00		
24	.00	.00	.00	.06	.00	.47	.00	.00	.00	.00	.00	.00		
25	.00	.14	.00	1.09	.15	.02	.00	.00	.00	.00	.00	.00		
26	.09	.00	.00	.00	2.49	.00	.50	.00	.00	.00	.00	.00		
27	.00	.00	.00	.33	.94	.04	.04	.78	.00	.10	.00	.00		
28	.00	.09	.00	.97	.16	.10	.00	.00	.04	.00	.49	.00		
29	.25	-----	.00	.38	.00	.00	.17	3.15	.00	.00	.00	.00		
30	.18	-----	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00		
31	.02	-----	.00	-----	.00	-----	.02	.00	-----	.00	-----	.00		
TOTAL	1.15	2.70	3.73	4.29	4.55	1.56	6.17	4.53	2.24	.10	5.70	4.15		
ST. A.V.	3.84	4.91	4.34	4.38	3.80	3.81	4.40	3.00	4.85	2.28	5.00	4.50		
NOTES: DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 7, 8, AND 18.														
1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-4	62.01
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	.28	.00	.00	.00	.00	.00	.00	.00	.00	.00		
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
3	.00	.00	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00		
4	.00	.00	.00	.00	.00	.00	.00	.00	20.51	.00	.00	.00		
5	.00	.00	5.20	.00	.08	.00	.00	.00	.00	.00	1.30	.00		
6	.00	.00	.00	.02	.10	.00	.00	.00	.00	.00	.00	.00		
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
10	.00	1.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.53		
11	.00	.38	5.71	.00	.00	.00	.00	.00	.00	.00	.00	20.65		
12	.00	.00	.25	.00	.00	.00	.00	.00	.00	.00	.00	.27		
13	.00	.00	.00	.00	.00	.00	2.31	.00	.00	.00	.00	.00		
14	.00	.00	.00	.00	.00	.00	.71	.00	.00	.00	.00	.00		
15	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00		
16	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00		
17	.00	.00	.10	.00	.00	.00	.03	.00	.00	.00	.00	.00		
18	.00	.00	.00	.00	.00	.00	.61	.00	.00	.00	.00	.00		
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
20	.00	.00	.00	.00	.00	.00	4.54	.00	.00	.00	17.70	.00		
21	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.17	.00		
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.55	.00		
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.15	.00		
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
25	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00		
26	.00	.00	.00	.00	13.99	.00	.32	.00	.00	.00	.00	.09		
27	.00	.00	.00	.00	9.96	.00	.00	.55	.00	.00	.00	.00		
28	.00	.00	.00	.22	.09	.00	.00	.00	.00	.00	.00	.00		
29	.00	-----	.00	.79	.00	.00	.00	38.60	.00	.00	.00	.00		
30	.00	-----	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00		
MEAN	.00	.05	.38	.03	.78	.00	.28	1.26	.68	.00	.76	.86		
INCHES	.00	.02	.14	.01	.29	.00	.10	.47	.24	.00	.27	.32		
NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.01190. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.														

1963 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-4 62.01			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of August 29, 1963 ^{1/}										
8-29	.00	.0000	8-29	3 RG	AVG 2/		8-29	0440	.00	.0000
				0415	.00	.00		0452	2.25	.0001
				0430	.24	.06		0518	39.00	.0045
				0445	1.96	.55		0536	182.41	.0209
				0500	2.28	1.12		0546	390.00	.0446
				0515	3.00	1.87		0600	568.00	.1000
				0530	1.12	2.15		0636	400.50	.2441
				0545	1.04	2.41		0706	241.64	.3237
				0600	.88	2.63		0748	118.84	.3862
				0615	.12	2.66		0834	58.11	.4199
				0630	.72	2.84		0946	21.00	.4434
				0645	.04	2.85		1102	9.61	.4530
				0700	.04	2.86		1202	4.27	.4564
				0830	.00	2.86		1330	1.14	.4584
				0845	.60	3.01		1500	.52	.4590
				0900	.20	3.06		1630	.02	.4592
				0915	.20	3.11		1846	.00	.4592
				0930	.00	3.11				
				0945	.04	3.12				
				1000	.12	3.15				

Watershed conditions: 22% of area in mature cotton and corn, fair to good cover; 10% in pasture, fair to good cover; 32% idle, fair to good cover; 34% in woods, good cover; 2% in bare gullies.

NOTES: TO CONVERT RUNOFF IN GFS TO IN/HR, MULTIPLY BY 0.000496. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISG. PUB. 945, P. 62.1-4. ^{1/} ISOHYETAL MAP ON P. 62.11-4. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON PREVIOUS PAGE. ^{2/} RAIN GAGES 7, 8, AND 18 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3.



OXFORD, MISSISSIPPI WATERSHED W-4

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI								WATERSHED W-5 ^{1/}		62.02	
						AREA—1,130 ACRES (1.76 SQ. MILES)											
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963 P ^{2/}	1.20	2.63	3.81	4.00	4.30	1.32	6.35	5.17	2.14	.35	5.61	4.19	41.07				
Q	.00	.00	.63	.09	.70	.00	.27	1.08	.27	.00	.33	1.22	4.76				
STA AV ^{3/} P	3.91	4.79	4.31	4.63	3.80	3.90	4.25	3.40	4.45	2.24	4.98	4.50	49.16				
(57-63) Q	1.55	1.66	1.21	1.02	.56	.47	.19	.26	.41	.17	.92	1.16	9.58				
MEAN P ^{4/}																	
44 YR	5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963	8-29	.46	8-29	.42	8-29	.70	8-29	.99	8-29	1.04	8-29	1.05	8-29	1.06	8-29	1.33	
MAXIMUMS FOR PERIOD OF RECORD																	
1957 TO	2-23	.90	2-23	.80	2-23	1.29	11-13	1.76	11-13	2.26	1-31	2.48	1-30	3.72	1-27	5.25	
1963	1962		1962		1962		1957		1957		1957		1957		1957		
NOTES: Watershed conditions: About 26% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 51% in pasture and idle land, good cover April to October with fair cover remainder of year; 21% in woods, good cover; 2% in bare gullies. 1/ About 10% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 8 and 33. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																	
1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI								WATERSHED W-5		62.02	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC					
1	.00	.00	.87	.00	.00	.00	.00	.00	.00	.00	.42	.00					
2	.00	.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00					
3	.00	.00	.00	.00	.00	.00	1.01	.00	.15	.00	.00	.00					
4	.00	.00	.36	.00	.00	.00	.00	.02	1.89	.00	.33	.00					
5	.18	.00	.65	.14	.30	.00	.07	.00	.00	.00	.82	.00					
6	.00	.00	.00	1.08	.00	.00	.00	.00	.00	.00	.00	.00					
7	.00	.00	.00	.00	.00	.00	.97	.00	.00	.00	.00	.45					
8	.00	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00	.00					
9	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00					
10	.00	1.52	.01	.00	.00	.00	.00	.00	.00	.00	.00	1.60					
11	.32	.10	1.15	.00	.00	.00	.00	.49	.00	.00	.00	1.10					
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00					
13	.00	.00	.00	.00	.00	.00	1.44	.04	.00	.00	.00	.00					
14	.00	.00	.00	.00	.04	.00	.64	.00	.00	.00	.00	.00					
15	.00	.00	.40	.00	.00	.03	.10	.00	.00	.00	.00	.00					
16	.00	.00	.17	.00	.00	.43	.00	.00	.00	.00	.00	.00					
17	.00	.00	.00	.00	.00	.00	.39	.00	.00	.00	.00	.00					
18	.00	.33	.00	.00	.00	.00	.00	.00	.00	.00	.09	.00					
19	.07	.07	.00	.21	.00	.20	.00	.00	.00	.00	.00	.00					
20	.00	.00	.00	.00	.00	.05	.98	.06	.00	.00	2.41	.00					
21	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00					
22	.01	.00	.00	.00	.06	.03	.00	.00	.00	.00	1.05	1.045					
23	.06	.07	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00					
24	.00	.00	.00	.06	.00	.23	.00	.00	.00	.00	.00	.00					
25	.00	.15	.00	.86	.12	.06	.00	.00	.00	.00	.00	.00					
26	.09	.00	.00	.00	2.42	.00	.25	.02	.00	.00	.00	.00					
27	.00	.00	.00	.37	1.12	.04	.05	1.29	.02	.35	.00	.00					
28	.00	.10	.00	.96	.24	.24	.00	.08	.00	.00	.49	.00					
29	.28	-----	.00	.32	.00	.00	.14	3.25	.00	.00	.00	.00					
30	.16	-----	.00	.00	.00	.00	.18	.00	.00	.00	.00	.00					
31	.03	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00					
TOTAL	1.20	2.63	3.81	4.00	4.30	1.32	6.35	5.17	2.14	.35	5.61	4.19					
STA AV	3.91	4.79	4.31	4.63	3.80	3.90	4.25	3.40	4.45	2.24	4.98	4.50					
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 8 AND 33. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.																	

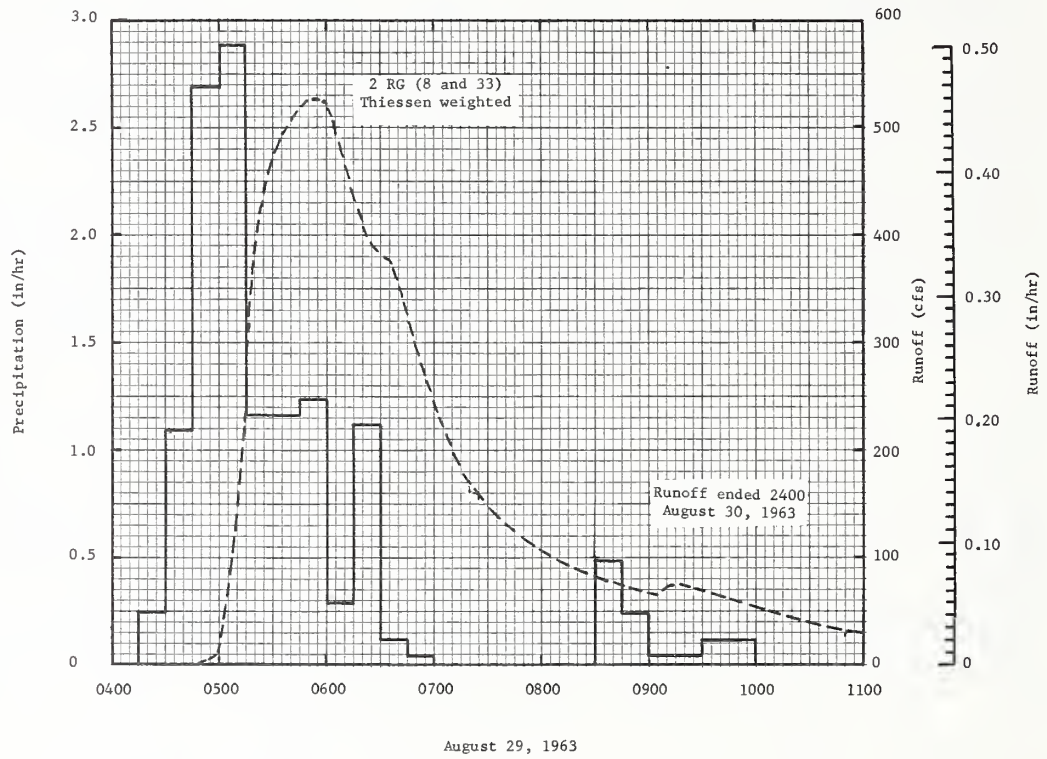
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI WATERSHED W-5 62.02						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	3.58	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.21	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.28	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	12.96	.00	.00	.00
5	.00	.00	9.50	.00	.00	.00	.00	.00	.03	.00	1.12	.00
6	.00	.00	.51	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.03	.00	.00	.00	1.76	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	5.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	10.88
11	.01	2.46	14.05	.00	.00	.00	.00	.00	.00	.00	.00	44.94
12	.00	.40	1.63	.00	.00	.00	.00	.00	.00	.00	.00	1.81
13	.00	.09	.15	.00	.00	.00	3.85	.00	.00	.00	.00	.12
14	.00	.01	.00	.00	.00	.00	3.06	.00	.00	.00	.00	.00
15	.00	.01	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.02	.27	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.01	.15	.00	.00	.00	.21	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	3.48	.00	.00	.00	10.35	.00
21	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.86	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.23	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	16.19	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	16.94	.00	.00	1.03	.00	.00	.00	.00
28	.00	.00	.00	.22	.01	.00	.00	.00	.00	.00	.00	.00
29	.00	-----	.00	3.86	.00	.00	.00	49.96	.00	.00	.00	.00
30	.00	-----	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00
MEAN	.00	.29	.97	.14	1.07	.00	.41	1.65	.43	.00	.52	1.86
INCHES	.00	.17	.63	.09	.70	.00	.27	1.08	.27	.00	.33	1.22

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.02106. QUALITY OF RECORDS: GOOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL.

1963 SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI WATERSHED W-5 62.02						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of August 29-30, 1963/										
8-29	2/.00	2/.0000	8-29	2 RG	AVG 3/		8-29	0448	.00	.0000
				0415	.00	.00		0500	10.51	.0009
				0430	.24	.06		0516	285.00	.0034
				0445	1.08	.33		0524	432.34	.0774
				0500	2.68	1.00		0534	489.00	.1448
				0515	2.88	1.72		0548	525.00	.2486
				0530	1.16	2.01		0600	522.00	.3405
				0545	1.16	2.30		0622	400.00	.4888
				0600	1.24	2.61		0636	375.00	.5682
				0615	.28	2.68		0652	287.00	.6456
				0630	1.12	2.96		0714	187.50	.7219
				0645	.12	2.99		0758	108.00	.8170
				0700	.04	3.00		0842	74.00	.8756
				0830	.00	3.00		0906	67.00	.9003
				0845	.48	3.12		0914	75.96	.9087
				0900	.24	3.18		0924	73.00	.9196
				0915	.04	3.19		0958	55.00	.9514
				0930	.04	3.20		1048	31.75	.9831
				0945	.12	3.23		1124	23.33	.9976
				1000	.12	3.26		1216	13.49	1.0116
								1322	9.07	1.0225
								1458	5.75	1.0329
								1756	2.63	1.0438
								2058	1.34	1.0491
								2400	.83	1.0520
							8-30	0602	.03	1.0543
								2400	.00	1.0545

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.000878. FOR MAP OF WATERSHED, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, ARS, SWC, JANUARY 1960, P. 62.2-3. 1/ ISOHYETAL MAP ON P. 62.11-4. 2/ FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RAIN GAGES 8 AND 33 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3.



OXFORD, MISSISSIPPI WATERSHED W-5

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED W-101/ AREA—5,530 ACRES (8.64 SQ. MILES)								62.03		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P ₂ / Q	1.39 .00	2.81 .05	4.16 .51	4.06 .04	4.89 .77	2.35 .01	6.37 .25	4.93 .66	2.90 .48	.03 .00	5.86 .32	4.44 .61	44.19 3.70			
STA AV ₃ /P (57-63) Q	3.98 1.17	5.00 1.46	4.42 1.02	4.68 .95	4.26 .73	4.00 .27	4.48 .27	3.20 .26	4.58 .52	2.22 .15	5.03 .74	4.71 .89	50.56 8.43			
MEAN P ₄ / 44 YR	5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-29	.35	8-29	.31	8-29	.50	8-29	.65	8-29	.65	5-26	.72	5-26	.76	8-29	1.14
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO 1963	2-23 1962	1.12	2-23 1962	1.00	2-23 1962	1.61	2-23 1962	2.13	2-23 1962	2.39	2-23 1962	2.58	1-30 1957	2.98	1-27 1957	4.08
NOTES: Watershed conditions: About 20% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 62% in pasture and idle land, good cover April to October with fair cover remainder of year; 15% in woods, good cover; 3% in bare gullies. 1/ About 12% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from gages 13, 14, 20, 24 and 26. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI WATERSHED W-10								62.03		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.91	.00	.00	.00	.00	.00	.00	.00	.48	.00				
2	.00	.38	.00	.00	.00	.00	.00	.54	.00	.00	.00	.00				
3	.00	.00	.00	.00	.00	.00	.16	.00	.22	.00	.00	.00				
4	.00	.00	.45	.00	.00	.00	.00	.00	2.52	.00	.25	.00				
5	.18	.00	.79	.15	.43	.00	.22	.00	.08	.00	.75	.00				
6	.00	.00	.00	1.13	.01	.00	.00	.00	.00	.00	.00	.00				
7	.00	.00	.00	.00	.00	.00	.44	.00	.00	.00	.00	.00				
8	.00	.00	.00	.00	.02	.00	.10	.00	.00	.00	.00	.00				
9	.00	.00	.21	.00	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	1.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.75				
11	.43	.16	1.17	.00	.00	.00	.00	.23	.00	.00	.00	1.19				
12	.00	.00	.00	.00	.00	.00	.00	.17	.00	.00	.00	.00				
13	.00	.00	.00	.00	.00	.00	1.60	.00	.00	.00	.00	.00				
14	.00	.00	.00	.00	.28	.00	.39	.00	.00	.00	.00	.00				
15	.00	.00	.47	.00	.00	.02	.08	.00	.00	.00	.00	.00				
16	.00	.00	.15	.00	.00	.77	.01	.00	.00	.00	.00	.00				
17	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00				
18	.00	.33	.00	.00	.00	.00	.01	.00	.00	.00	.10	.00				
19	.07	.07	.00	.20	.00	.18	.00	.00	.00	.00	.00	.00				
20	.00	.00	.00	.00	.00	.17	1.43	.08	.00	.00	2.74	.00				
21	.00	.00	.00	.00	.02	.64	.00	.00	.00	.00	.00	.00				
22	.02	.00	.00	.00	.06	.19	.00	.00	.00	.00	.98	1.05				
23	.07	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
24	.00	.00	.00	.07	.00	.18	.00	.00	.00	.00	.00	.00				
25	.01	.15	.01	.84	.09	.00	.00	.00	.00	.00	.00	.00				
26	.09	.00	.00	.00	2.82	.00	1.14	.43	.00	.00	.00	.00				
27	.00	.00	.00	.52	1.07	.00	.00	.63	.00	.03	.00	.00				
28	.00	.13	.00	.93	.09	.20	.00	.00	.08	.00	.56	.00				
29	.29	-----	.00	.22	.00	.00	.15	2.85	.00	.00	.00	.00				
30	.19	-----	.00	.00	.00	.00	.34	.00	.00	.00	.00	.00				
31	.04	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00				
TOTAL	1.39	2.81	4.16	4.06	4.89	2.35	6.37	4.93	2.90	.03	5.86	4.44				
STA AV	3.98	5.00	4.42	4.68	4.26	4.00	4.48	3.20	4.58	2.22	5.03	4.71				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 13, 14, 20, 24, AND 26. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.																

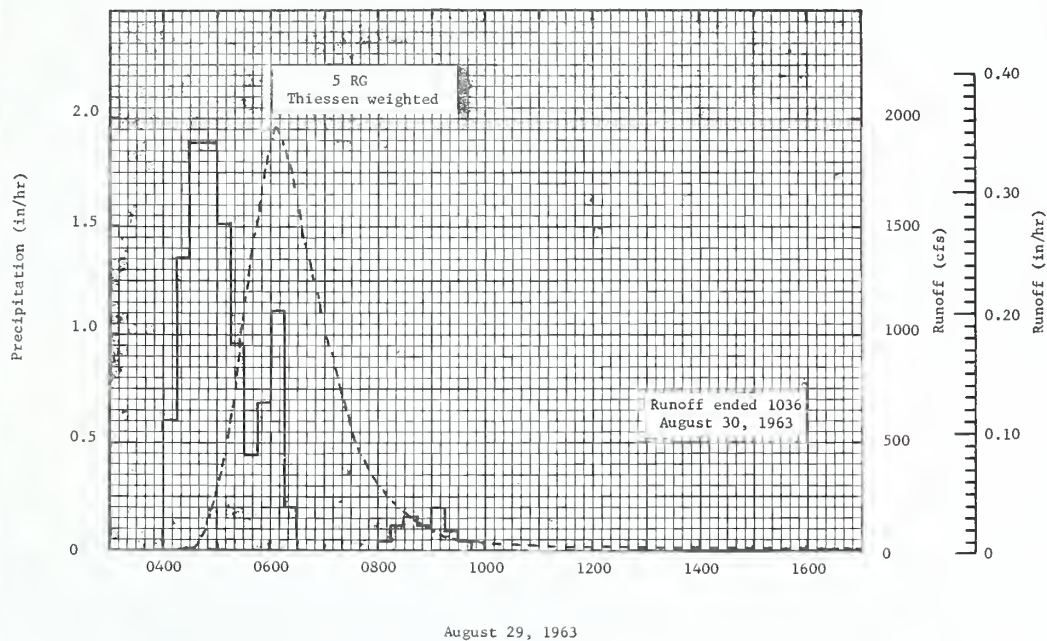
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-10 62.03	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	7.70	.00	.03	.00	.00	.00	.00	.00	.00	.00		
2	.00	.00	.19	.00	.00	.00	.00	.33	.00	.00	.00	.00		
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
4	.00	.00	.00	.00	.00	.00	.00	.00	112.49	.00	.00	.00		
5	.00	.00	54.07	.00	1.94	.00	.18	.00	.19	.00	.57	.00		
6	.00	.00	.31	.02	1.10	.00	.00	.00	.00	.00	.00	.00		
7	.00	.00	.05	.00	.00	.00	.75	.00	.00	.00	.00	.00		
8	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00		
9	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00		
10	.00	7.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	22.87		
11	.01	2.54	47.76	.00	.00	.00	.00	.00	.00	.00	.00	112.13		
12	.00	.44	5.73	.00	.00	.00	.00	.00	.00	.00	.00	5.96		
13	.00	.10	.10	.00	.00	.00	25.83	.00	.00	.00	.00	.39		
14	.00	.00	.04	.00	.01	.00	.55	.00	.00	.00	.00	.00		
15	.00	.00	.59	.00	.00	.00	.00	.00	.00	.00	.00	.00		
16	.00	.00	1.10	.00	.00	.00	.00	.00	.00	.00	.00	.00		
17	.00	.00	.52	.00	.00	.00	.00	.00	.00	.00	.00	.00		
18	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00		
19	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00		
20	.00	.00	.00	.00	.00	.00	21.56	.00	.00	.00	67.72	.00		
21	.00	.00	.00	.00	.00	2.38	1.71	.00	.00	.00	.19	.00		
22	.00	.00	.00	.00	.00	.03	.05	.00	.00	.00	5.83	.00		
23	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.03	.00		
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
25	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00		
26	.00	.00	.00	.00	100.63	.00	5.83	.00	.00	.00	.00	.18		
27	.00	.00	.00	.06	74.87	.00	.37	1.36	.00	.00	.00	.03		
28	.00	.00	.00	.21	.22	.00	.10	.00	.00	.00	.00	.00		
29	.00	-----	.00	8.61	.05	.00	.11	151.79	.00	.00	.00	.00		
30	.00	-----	.00	.15	.00	.00	.90	.01	.00	.00	.00	.00		
31	.00	-----	.00	.00	.00	-----	.04	.00	-----	.00	-----	.00		
MEAN	.00	.37	3.81	.30	5.77	.08	1.87	4.95	3.76	.00	2.48	4.56		
INCHES	.00	.05	.51	.04	.77	.01	.25	.66	.48	.00	.32	.61		

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0043041. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1963 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-10 62.03			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of August 29-30, 1963 ^{1/2}										
8-29	.00	.0000	8-29	5 RG	AVG ^{2/}		8-29	0418	.00	.0000
				0400	.00	.00		0436	14.11	.0003
				0415	.60	.15		0514	580.00	.0341
				0430	1.36	.49		0530	1114.37	.0746
				0445	1.88	.96		0550	1694.40	.1585
				0500	1.88	1.43		0606	1960.00	.2459
				0515	1.52	1.81		0626	1694.40	.3551
				0530	.96	2.05		0654	1140.00	.4737
				0545	.44	2.16		0720	720.00	.5460
				0600	.68	2.33		0738	469.68	.5780
				0615	1.12	2.61		0810	245.85	.6122
				0630	.20	2.66		0850	102.75	.6331
				0800	.00	2.66		0944	38.00	.6444
				0815	.04	2.67		1108	11.55	.6506
				0830	.12	2.70		1158	4.63	.6519
				0845	.16	2.74		1316	.90	.6525
				0900	.12	2.77		1454	.77	.6527
				0915	.20	2.82		1626	.58	.6529
				0930	.08	2.84		1756	.33	.6530
				0945	.04	2.85		2056	.12	
								2056	.12	.6532
								2400	.02	.6532
							8-30	1036	.00	.6532
Watershed conditions: 20% of area in mature cotton and corn, fair cover; 9% in pasture and 53% idle, fair to good cover; 15% in woods, good cover; 3% in bare gullies.										

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0001793. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.3-3. 1/ ISOHYETAL MAP ON P. 62.11-4. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 2/ RAIN GAGES 13, 14, 20, 24, AND 26 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3.



OXFORD, MISSISSIPPI WATERSHED W-10

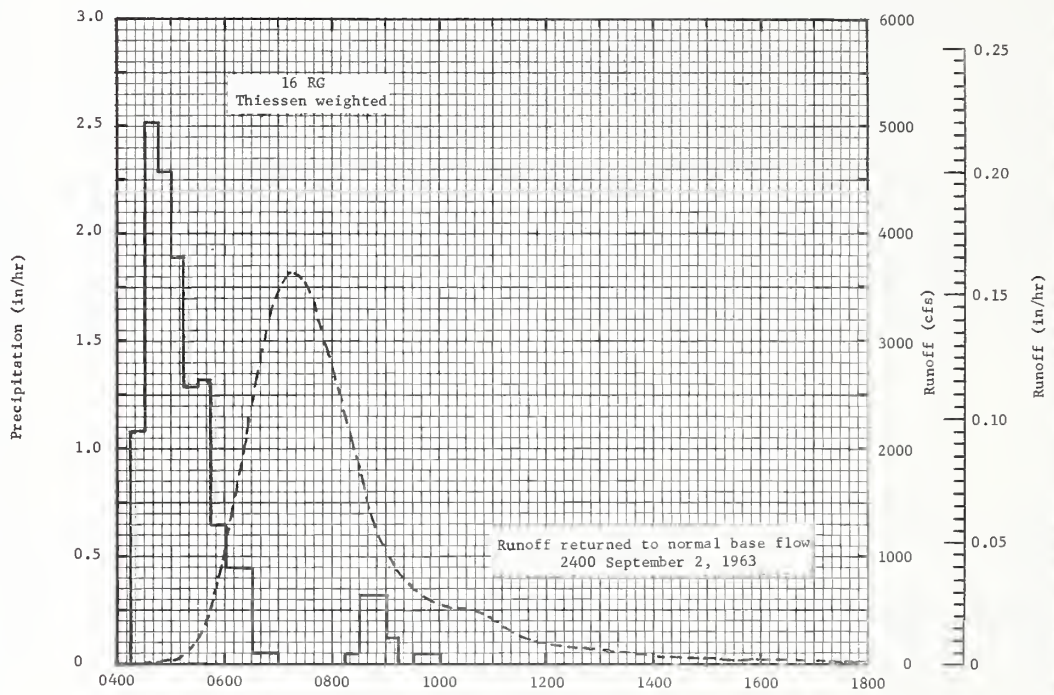
MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI						WATERSHED W-121/ AREA—22,800 ACRES (35.6 SQ. MILES)		62.04		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P ₂ /	1.32	2.79	3.92	4.17	4.75	1.85	5.58	4.58	2.07	.04	5.64	4.07	40.78		
	Q	.02	.07	.32	.05	.53	.02	.09	.44	.20	.01	.16	.30	2.21		
STA AV ₃ /P (57-63)	Q	3.92	4.85	4.30	4.37	3.92	4.05	4.31	3.21	4.39	2.23	4.94	4.46	48.95		
		.83	1.06	.69	.55	.40	.26	.17	.12	.25	.08	.43	.62	5.46		
MEAN P 4/ 44 YR		5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-29	.16	8-29	.15	8-29	.26	8-29	.40	8-29	.43	5-26	.48	5-26	.51	8-29	.62
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO 1962	2-23	.35	2-23 1962	.35	2-23 1962	.68	2-23 1962	1.38	2-23 1962	1.62	2-23 1962	1.84	1-30 1957	2.28	1-27 1957	3.07
NOTES: Watershed conditions: About 20% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 52% in pasture and idle land, good cover April to October with fair cover remainder of year; 23% in woods, good cover; 2% in bare gullies; 3% urban. 1/ About 15% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 16 rain gages. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI						WATERSHED W-12		62.04		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.88	.00	.00	.00	.00	.00	.00	.00	.42	.00				
2	.00	.36	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00				
3	.00	.00	.00	.00	.00	.00	.44	.00	.21	.00	.00	.00				
4	.00	.00	.38	.00	.00	.00	.00	.00	1.77	.00	.33	.00				
5	.17	.00	.79	.14	.43	.00	.21	.00	.01	.00	.75	.00				
6	.00	.00	.00	1.12	.01	.00	.00	.00	.00	.00	.00	.00				
7	.00	.00	.00	.00	.00	.00	.56	.01	.00	.00	.00	.43				
8	.00	.00	.00	.00	.00	.00	.15	.00	.00	.00	.00	.00				
9	.00	.00	.19	.00	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	1.60	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.53				
11	.44	.13	1.03	.00	.00	.00	.00	.22	.00	.00	.00	1.05				
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
13	.00	.00	.00	.00	.00	.00	1.46	.03	.00	.00	.00	.00				
14	.00	.00	.00	.00	.15	.00	.31	.00	.00	.00	.00	.00				
15	.00	.00	.37	.00	.00	.23	.08	.00	.00	.00	.00	.00				
16	.00	.00	.21	.00	.00	.60	.01	.00	.00	.00	.00	.00				
17	.00	.00	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00				
18	.00	.30	.00	.00	.00	.00	.26	.00	.00	.00	.08	.00				
19	.07	.08	.00	.15	.00	.14	.00	.03	.00	.00	.00	.00				
20	.00	.00	.00	.00	.00	.15	1.06	.04	.00	.00	2.51	.00				
21	.00	.00	.00	.00	.05	.02	.00	.00	.00	.00	.00	.00				
22	.01	.00	.00	.00	.05	.20	.00	.00	.00	.00	1.02	1.06S				
23	.09	.08	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00				
24	.00	.00	.00	.09	.00	.35	.00	.00	.00	.00	.00	.00				
25	.00	.14	.07	1.01	.14	.05	.00	.00	.00	.00	.00	.00				
26	.09	.00	.00	.00	2.70	.00	.41	.10	.00	.00	.00	.00				
27	.00	.00	.00	.35	1.05	.02	.02	.91	.00	.04	.00	.00				
28	.00	.10	.00	1.03	.17	.09	.00	.00	.08	.00	.53	.00				
29	.26	-----	.00	.28	.00	.00	.12	3.21	.00	.00	.00	.00				
30	.16	-----	.00	.00	.00	.00	.23	.00	.00	.00	.00	.00				
31	.03	-----	.00	-----	.00	-----	.02	.00	-----	.00	-----	.00				
TOTAL	1.32	2.79	3.92	4.17	4.75	1.85	5.58	4.58	2.07	.04	5.64	4.07				
STA AV	3.92	4.85	4.30	4.37	3.92	4.05	4.31	3.21	4.39	2.23	4.94	4.46				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 4-9, 13, 15, 18, 19, 20, 25, 29, 30, 31, AND 33. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.																

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI						WATERSHED W-12 62.04	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.12	.11	11.58	.94	.93	.38	.07	.48	.52	.11	.16	.35	
2	.12	3.12	6.47	.82	1.00	.35	.04	.39	.11	.11	.16	.28	
3	.19	6.82	2.57	.82	1.12	.31	.06	.42	.05	.16	.20	.28	
4	.16	.67	1.51	1.08	.61	.43	.06	.42	177.60	.18	.51	.35	
5	.25	.61	120.39	1.26	.29	.47	.07	.33	1.80	.18	.94	.29	
6	.28	.54	2.69	2.43	.82	.35	.07	.38	.66	.18	.19	.18	
7	.36	.28	2.85	1.20	.52	.28	.39	.56	.76	.14	.22	.45	
8	.39	.20	2.29	1.00	.35	.25	.49	.47	.76	.14	.31	.67	
9	.31	.52	2.21	1.00	.28	.40	.11	.38	.54	.18	.23	.28	
10	.22	24.62	2.02	1.00	.22	1.05	.14	.38	.35	.29	.14	4.44	
11	2.40	16.46	85.89	.93	.29	1.10	.11	.32	.29	.27	.16	260.36	
12	2.53	1.72	18.78	.82	.42	.76	.07	.28	.25	.16	.20	12.27	
13	.94	1.07	5.58	.88	.46	.76	18.21	.39	.35	.18	.20	1.93	
14	1.15	1.07	4.07	1.00	.61	.56	13.97	.42	.35	.16	.20	.56	
15	1.01	.56	3.33	1.00	.46	2.34	.69	.35	.35	.11	.20	.39	
16	.56	.18	5.94	.82	.41	2.45	.25	.31	.35	.15	.20	.18	
17	.56	.33	6.51	1.03	.56	1.49	.14	.23	.43	.16	.18	.06	
18	.51	.71	2.47	1.03	.51	.43	.30	.16	.51	.13	.23	.10	
19	.43	.87	1.40	.76	.51	.35	.19	.31	.42	.16	.22	.14	
20	.31	.67	1.55	.76	.51	.57	40.09	.42	.32	.20	113.93	.12	
21	.48	.33	1.21	.96	.56	.57	10.75	.42	.28	.15	2.68	.12	
22	.39	.22	1.07	1.07	.47	.42	.20	.42	.35	.18	22.89	.14	
23	.13	.45	1.19	.93	.42	.26	.36	.38	.42	.25	4.03	.16	
24	.14	.48	1.19	.82	.39	.25	.42	.38	.39	.19	.51	.22	
25	.18	.43	1.26	.65	.31	.14	.32	.38	.31	.16	.39	.56	
26	.14	.38	1.40	.60	267.87	.18	.73	.25	.35	.22	.35	3.34	
27	.11	.25	1.21	.60	224.47	.13	.40	.92	.32	.32	.27	1.64	
28	.11	1.17	1.07	.33	2.28	.10	.32	.19	.28	.27	.82	.18	
29	.11	-----	1.07	17.35	1.00	.13	.32	412.52	.31	.23	.44	.19	
30	.13	-----	1.00	2.10	.71	.13	.64	1.52	.31	.31	.32	.10	
31	.11	-----	1.12	-----	.47	-----	.52	.87	-----	.25	-----	.10	
MEAN	.47	2.31	9.77	1.53	16.44	.58	2.91	13.73	6.33	.19	5.04	9.36	
INCHES	.02	.07	.32	.05	.53	.02	.09	.44	.20	.01	.16	.20	

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0010439. QUALITY OF RECORDS: GOOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL.

1963 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-12 62.04			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of August 29-30, 1963 ^{1/}										
8-29	.00	.0000	8-29	16 RG	AVG ^{2/}		8-29	0422	.08	.0000
				0415	.00	.00		0512	66.81	.0012
				0430	1.08	.27		0534	302.68	.0041
				0445	2.52	.90		0558	976.00	.0152
				0500	2.28	1.47		0626	2258.00	.0481
				0515	1.88	1.94		0650	3266.00	.0961
				0530	1.28	2.26		0712	3631.00	.1511
				0545	1.32	2.59		0734	3469.00	.2077
				0600	.64	2.75		0822	2033.26	.3035
				0615	.44	2.86		0844	1360.00	.3305
				0630	.44	2.97		0936	670.00	.3688
				0645	.04	2.98		1018	504.68	.3867
				0700	.04	2.99		1040	489.68	.3946
				0715	.00	2.99		1112	336.32	.4042
				0815	.00	2.99		1154	187.95	.4122
				0830	.04	3.00		1302	112.00	.4195
				0845	.32	3.08		1404	66.81	.4236
				0900	.32	3.16		1530	32.95	.4267
				0915	.12	3.19		1742	10.51	.4288
				0930	.00	3.19		2040	6.34	.4298
				0945	.04	3.20		2238	4.46	.4303
				1000	.04	3.21		2400	4.46	.4305
							8-30	1154	^{3/} .38	.4318

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000435. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.4-6. 1/ ISOHYETAL MAP ON P. 62.11-4. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 2/ RAIN GAGES 4-9, 13, 15, 18, 19, 20, 25, 29, 30, 31, AND 33 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3. 3/ RUNOFF DECREASED TO 0.06 CFS (NORMAL BASE FLOW) AT 2400 ON 9-2-63.



August 29, 1963

OXFORD, MISSISSIPPI WATERSHED W-12

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI						WATERSHED W-17 ^{1/}		62.05		
						AREA—32,100 ACRES (50.2 SQ. MILES)										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P ^{2/}	1.39	2.97	4.20	4.20	4.63	1.84	5.49	4.68	2.15	.06	5.56	4.07	41.24		
	Q	.23	.32	.71	.30	.79	.22	.28	.74	.37	.17	.35	.56	5.04		
STA AV ^{3/}	P	3.98	4.88	4.29	4.43	3.90	4.10	4.37	3.39	4.21	2.24	4.89	4.55	49.23		
	(57-63) Q	1.13	1.33	1.06	.76	.68	.42	.35	.38	.43	.26	.70	.88	8.38		
MEAN P ^{4/}																
44 YR		5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-29	.15	8-29	.15	8-29	.28	8-29	.49	8-29	.53	8-29	.55	5-26	.58	8-28	.78
MAXIMUMS FOR PERIOD OF RECORD																
19 57 TO	2-23	.21	2-23	.21	2-23	.41	2-23	1.12	2-23	1.50	2-23	1.69	1-31	1.96	1-28	2.99
19 63	1962		1962		1962		1962		1962		1962		1957		1957	
NOTES: Watershed conditions: About 20% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 55% in pasture and idle land, good cover April to October with fair cover remainder of year; 21% in woods, good cover; 2% in bare gullies; 2% urban. 1/ About 18% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 21 rain gages. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI						WATERSHED W-17		62.05		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.89	.00	.00	.00	.00	.00	.00	.00	.44	.00				
2	.00	.43	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00				
3	.00	.00	.00	.00	.00	.00	.32	.00	.21	.00	.00	.00				
4	.00	.00	.41	.00	.00	.00	.00	.00	1.85	.00	.37	.00				
5	.17	.00	.83	.14	.41	.00	.20	.00	.01	.00	.70	.00				
6	.00	.00	.00	1.13	.01	.00	.00	.00	.00	.00	.00	.00				
7	.00	.00	.00	.00	.00	.00	.56	.01	.00	.00	.00	.44				
8	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00	.00				
9	.00	.00	.19	.00	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	1.67	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.54				
11	.49	.15	1.17	.00	.00	.00	.00	.19	.00	.00	.00	.00	1.02			
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
13	.00	.00	.00	.00	.00	.00	1.52	.03	.00	.00	.00	.00				
14	.00	.00	.00	.00	.19	.00	.30	.00	.00	.00	.00	.00				
15	.00	.00	.36	.00	.00	.27	.07	.00	.00	.00	.00	.00				
16	.00	.00	.27	.00	.00	.62	.02	.00	.00	.00	.00	.00				
17	.00	.00	.00	.00	.00	.00	.17	.00	.00	.00	.00	.00				
18	.00	.30	.00	.00	.00	.00	.18	.00	.00	.00	.08	.00				
19	.07	.08	.00	.14	.00	.11	.00	.03	.00	.00	.01	.00				
20	.00	.00	.00	.00	.00	.20	1.02	.04	.00	.00	2.42	.00				
21	.00	.00	.00	.00	.04	.01	.00	.00	.00	.00	.00	.00				
22	.01	.00	.00	.00	.05	.16	.00	.00	.00	.00	1.01	1.075				
23	.10	.09	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00				
24	.00	.00	.00	.09	.00	.32	.00	.00	.00	.00	.00	.00				
25	.00	.14	.08	1.01	.13	.07	.00	.00	.00	.00	.00	.00				
26	.09	.00	.00	.00	2.72	.00	.43	.08	.00	.00	.00	.00				
27	.00	.00	.00	.36	.95	.01	.02	.90	.00	.06	.00	.00				
28	.00	.11	.00	1.07	.13	.07	.00	.00	.08	.00	.53	.00				
29	.26	-----	.00	.26	.00	.00	.21	3.33	.00	.00	.00	.00				
30	.16	-----	.00	.00	.00	.00	.26	.00	.00	.00	.00	.00				
31	.04	-----	.00	-----	.00	-----	.02	.00	-----	.00	-----	.00				
TOTAL	1.39	2.97	4.20	4.20	4.63	1.84	5.49	4.68	2.15	.06	5.56	4.07				
STA AV	3.98	4.88	4.29	4.43	3.90	4.10	4.37	3.39	4.21	2.24	4.89	4.55				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 2, 4-9, 13-15, 17-20, 22, 25, 28-31, AND 33. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.																

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI WATERSHED W-17 62.05						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	9.38	9.95	36.63	12.67	11.42	8.83	7.72	8.00	8.00	7.41	7.40	7.99
2	10.54	14.00	14.36	13.66	9.68	8.55	6.34	8.28	7.45	7.60	7.40	8.62
3	11.41	12.94	11.55	13.33	9.68	9.41	5.78	8.28	8.65	7.22	7.80	10.04
4	10.54	10.24	11.23	12.66	10.81	11.11	5.78	6.89	253.43	6.86	7.99	10.51
5	10.24	9.68	249.92	12.66	11.04	10.54	7.17	7.44	12.32	6.68	7.99	9.09
6	10.52	9.39	25.37	21.86	5.91	9.95	8.00	8.28	6.34	6.68	7.99	8.85
7	10.82	10.52	10.52	17.01	9.66	10.23	8.90	8.28	6.62	7.23	7.99	13.55
8	10.82	10.81	10.52	11.71	10.24	9.95	7.72	8.55	6.62	7.23	8.40	14.58
9	9.39	10.52	9.95	10.54	10.52	9.38	8.28	8.83	5.52	6.68	8.01	11.03
10	9.11	74.71	10.84	10.24	10.23	9.38	8.28	8.83	5.52	7.23	8.23	21.03
11	12.83	47.34	240.38	9.68	10.52	9.95	7.17	8.55	6.89	7.23	8.62	428.62
12	11.16	17.66	36.22	8.83	10.52	9.39	6.06	8.28	9.41	7.04	8.19	43.62
13	9.38	12.36	18.24	8.83	9.95	7.72	33.35	8.28	10.52	7.40	8.19	11.64
14	9.10	11.11	16.61	9.11	9.66	8.56	34.72	8.28	9.95	7.04	8.40	10.00
15	9.67	11.42	16.22	10.54	11.16	11.44	9.39	8.83	10.54	6.68	8.20	9.76
16	9.95	11.42	23.60	10.82	10.88	11.44	8.55	9.38	10.82	6.68	7.79	8.65
17	9.95	11.11	34.80	10.52	8.83	9.39	8.28	8.55	9.67	6.86	7.60	8.20
18	9.12	14.21	18.73	10.24	9.11	9.68	7.44	8.28	9.38	7.03	7.80	8.61
19	8.55	14.83	14.06	10.24	8.83	9.41	6.89	8.28	9.11	7.03	8.40	8.83
20	9.67	12.03	12.34	10.81	8.55	8.83	53.98	8.28	8.55	7.22	169.38	8.42
21	9.95	10.82	12.34	10.81	9.38	10.84	34.76	8.83	8.83	7.04	17.03	7.79
22	9.38	9.95	12.66	9.68	9.38	11.13	9.96	8.55	9.38	7.23	39.56	9.41
23	9.10	10.54	12.34	8.55	9.10	10.82	9.96	8.28	9.38	7.41	26.06	9.41
24	9.96	12.03	12.34	9.11	8.83	11.11	8.83	8.83	8.28	7.41	10.76	8.65
25	9.96	12.34	12.66	16.03	9.68	11.42	8.83	8.83	7.17	7.60	10.25	8.65
26	9.38	11.71	12.66	11.44	475.71	10.84	8.83	8.00	7.44	7.40	10.00	9.41
27	9.66	11.11	12.34	11.13	312.04	10.24	8.28	9.35	8.83	7.80	9.52	10.51
28	9.66	11.11	12.02	24.84	10.88	10.24	8.00	8.58	9.11	7.99	8.62	9.30
29	9.95	-----	12.02	52.11	9.10	9.11	10.48	735.87	8.83	7.99	7.99	8.61
30	10.52	-----	12.34	14.51	8.83	8.55	9.38	12.90	9.10	8.19	7.79	8.20
31	10.24	-----	12.34	-----	8.55	-----	8.83	8.00	-----	7.80	-----	7.79
MEAN	9.99	15.22	30.90	13.47	34.47	9.91	12.12	32.01	16.72	7.25	15.64	24.49
INCHES	.23	.32	.71	.30	.79	.22	.28	.74	.37	.17	.35	.56

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0007415. QUALITY OF RECORDS: GOOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL.

1963			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-17		62.05	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)				
Event of August 29-30, 1963 ^{1/}														
8-29	.00	2/.0010	8-29	21 RG	AVG 3/		8-29	0406	8.00	.0000				
				0400	.00	.00		0430	14.00	.0001				
				0415	.16	.04		0458	49.72	.0005				
				0430	1.52	.42		0512	265.69	.0017				
				0445	2.68	1.09		0534	1552.72	.0120				
				0500	2.32	1.67		0552	2297.52	.0298				
				0515	1.72	2.10		0622	3524.16	.0748				
				0530	1.36	2.44		0640	4040.95	.1098				
				0545	1.36	2.78		0658	4491.00	.1494				
				0600	.48	2.90		0736	4995.00	.2422				
				0615	.40	3.00		0802	4900.50	.3084				
				0630	.36	3.09		0834	3919.37	.3811				
				0645	.00	3.09		0900	2492.40	.4240				
				0700	.04	3.10		0918	1720.26	.4435				
				0715	.00	3.10		1000	795.29	.4707				
				0730	.00	3.10		1030	574.84	.4813				
				0815	.00	3.10		1036	530.68	.4830				
				0830	.12	3.13		1054	476.76	.4877				
				0845	.36	3.22		1114	478.46	.4926				
				0900	.28	3.29		1124	441.05	.4950				
0915	.08	3.31	1136	399.19	.4976									
0930	.04	3.32	1158	351.00	.5018									
0945	.00	3.32	1256	275.45	.5112									
1000	.04	3.33	1342	241.99	.5173									
						1456	170.88	.5252						

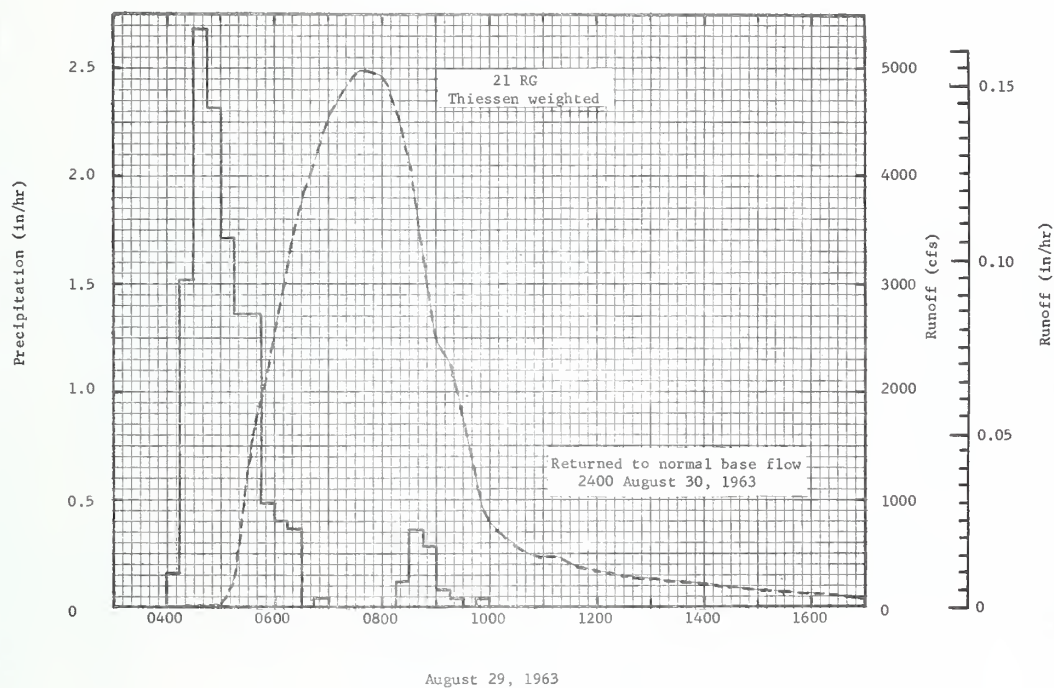
Continued on next page

Continued on next page

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.000309. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.5-5. 1/ ISOHYETAL MAP ON P. 62.11-4. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 2/ RUNOFF PRIOR TO 0406 ON 8-29-63. 3/ RAIN GAGES 2, 4-9, 13-15, 17-20, 22, 25, 28-31, AND 33 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3.

SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-17 62.05			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Watershed conditions: 20% of area in mature cotton and corn, fair cover; 13% in pasture and 42% idle, fair to good cover; 21% in woods, good cover; 2% in bare gullies; 2% urban.			Event of August 29-30, 1963— Continued							
								1628	107.35	+5318
								1624	66.65	+5370
								2026	46.37	+5405
								2230	35.87	+5431
								2400	27.28	+5446
							8-30	0302	18.63	+5467
								0732	15.45	+5491
								1158	10.23	+5509
								2400	1/ 7.44	+5542

NOTES: 1/ NORMAL BASE FLOW.



OXFORD, MISSISSIPPI WATERSHED W-17

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI								WATERSHED W-19		62.06
						AREA—243 ACRES										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/	1.33	3.59	4.58	4.84	4.36	1.12	3.87	2.73	3.18	.00	4.61	3.61	37.82		
	Q	.02	.05	.79	.26	.24	.00	.02	.27	.26	.00	.01	.08	2.00		
STA AV 2/ P		4.02	5.08	4.36	4.53	3.55	3.93	4.30	3.61	4.49	1.95	4.50	4.65	48.97		
	(57-63) Q	.80	.96	.61	.41	.29	.17	.14	.19	.49	.04	.35	.49	4.94		
MEAN P 3/																
44 YR		5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-29	.24	3-11	.18	3-11	.29	3-11	.43	3-11	.50	3-11	.52	3-11	.52	3-5	.79
MAXIMUMS FOR PERIOD OF RECORD																
19 57 TO 19 63	9-19 1958	1.05	9-19 1958	.66	2-23 1962	.91	2-23 1962	1.18	2-23 1962	1.77	2-23 1962	1.93	9-19 1958	2.14	1-28 1957	3.23
NOTES: Watershed conditions: About 2% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 68% in pasture and idle land, good cover April to October with fair cover remainder of year; 29% in woods, good cover; 1% in bare gullies. 1/ Monthly precipitation from rain gage 2. 2/ Precipitation and runoff records began Jan. 1957. 3/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI								WATERSHED W-19		62.06
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.95	.00	.00	.00	.00	.00	.00	.00	.45	.00				
2	.00	.51	.00	.00	.00	.00	.00	.15	.00	.00	.00	.00				
3	.00	.00	.00	.00	.00	.00	.00	.00	.59	.00	.00	.00				
4	.00	.00	.60	.00	.00	.00	.00	.00	2.39	.00	.55	.00				
5	.19	.00	.81	.15	.55	.00	.00	.00	.00	.00	.45	.00				
6	.00	.00	.00	1.10	.00	.00	.00	.00	.00	.00	.00	.00				
7	.00	.00	.00	.00	.00	.00	.49	.00	.00	.00	.00	.34				
8	.00	.00	.00	.00	.00	.00	.27	.00	.00	.00	.00	.00				
9	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	2.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.41				
11	.35	.16	1.47	.00	.00	.00	.00	.00	.00	.00	.00	.76				
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
13	.00	.00	.00	.00	.00	.00	1.45	.00	.00	.00	.00	.00				
14	.00	.00	.00	.00	.45	.00	.15	.00	.00	.00	.00	.00				
15	.00	.00	.30	.00	.00	.20	.00	.00	.00	.00	.00	.00				
16	.00	.00	.23	.00	.00	.47	.00	.00	.00	.00	.00	.00				
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
18	.00	.27	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00				
19	.09	.10	.00	.10	.00	.00	.00	.05	.00	.00	.00	.00				
20	.00	.00	.00	.00	.00	.22	.60	.14	.00	.00	1.75	.00				
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.88	1.105				
23	.20	.18	.00	.00	.05	.00	.03	.00	.00	.00	.00	.00				
24	.00	.00	.00	.13	.00	.23	.00	.00	.00	.00	.00	.00				
25	.00	.11	.07	.97	.10	.00	.00	.00	.00	.00	.00	.00				
26	.09	.00	.00	.00	2.41	.00	.45	.00	.00	.00	.00	.00				
27	.00	.00	.00	.36	.75	.00	.00	.04	.00	.00	.00	.00				
28	.00	.11	.00	1.14	.05	.00	.00	.00	.20	.00	.48	.00				
29	.21	-----	.00	.89	.00	.00	.30	2.35	.00	.00	.00	.00				
30	.15	-----	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00				
31	.05	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00				
TOTAL	1.33	3.59	4.58	4.84	4.36	1.12	3.87	2.73	3.18	.00	4.61	3.61				
STA AV	4.02	5.08	4.36	4.53	3.55	3.93	4.30	3.61	4.49	1.95	4.50	4.65				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES FROM RAIN GAGE 2. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.																

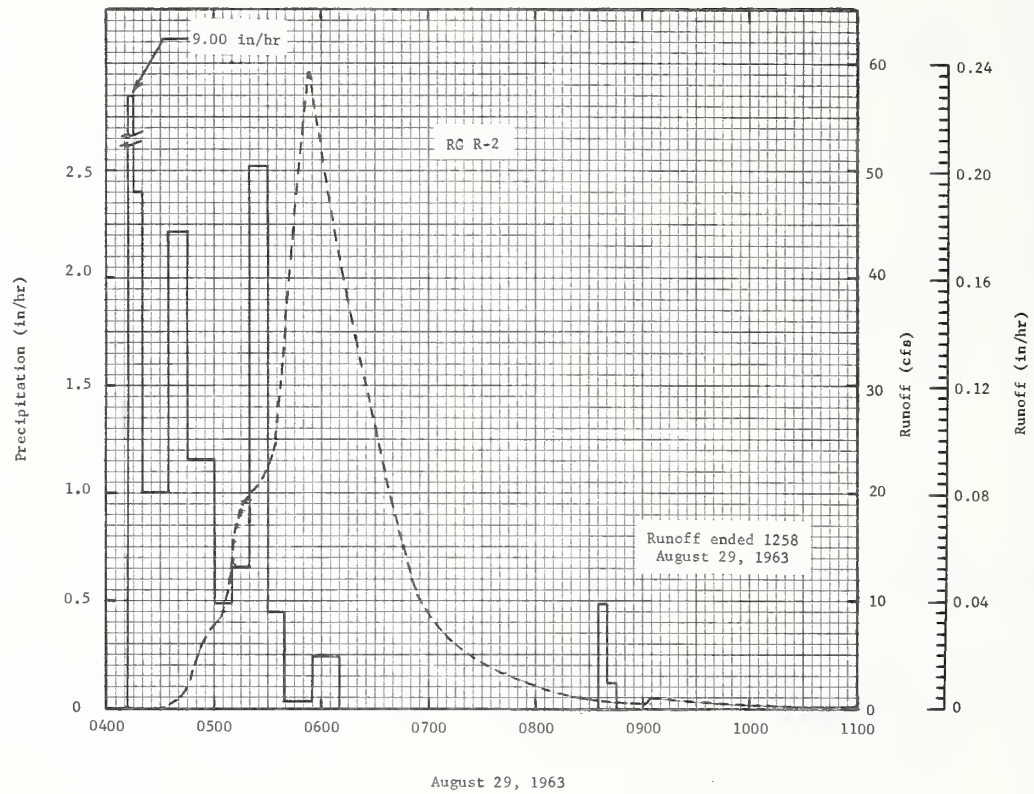
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1963 MEAN DAILY DISCHARGE (cfs)					OXFORD, MISSISSIPPI				WATERSHED W-19				62-06
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	
2	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
4	.00	.00	.00	.00	.00	.00	.00	.00	2.62	.00	.00	.00	
5	.00	.00	2.77	.00	.01	.00	.00	.00	.01	.00	.02	.00	
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
10	.00	.47	.00	.00	.00	.00	.00	.00	.00	.00	.00	.22	
11	.04	.04	5.24	.00	.00	.00	.00	.00	.00	.00	.00	.61	
12	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	
13	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00	
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
16	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
25	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	
26	.00	.00	.00	.00	1.50	.00	.00	.00	.00	.00	.00	.03	
27	.00	.00	.00	.00	.91	.00	.00	.00	.00	.00	.00	.00	
28	.00	.00	.00	.22	.00	.00	.00	.00	.00	.00	.00	.00	
29	.00	-----	.00	2.42	.00	.00	.00	2.75	.00	.00	.00	.00	
30	.15	-----	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00	
MEAN	.01	.02	.26	.09	.08	.00	.01	.09	.09	.00	.00	.03	
INCHES	.02	.05	.79	.26	.24	.00	.02	.27	.26	.00	.01	.08	

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.09795. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1963 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-19 62.06								
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)					
8-29	.00	.0000	8-29	Event of August 29, 1963 ^{1/}			8-29	0432	.00	.0000					
				RG	2			0440	.85	.0001					
				0412	.00	.00		0452	5.22	.0026					
				0415	9.00	.45		0504	8.31	.0081					
				0420	2.40	.65		0516	19.12	.0192					
				0435	1.00	.90									
				0445	2.22	1.27		0528	21.50	.0358					
				0500	1.16	1.56		0538	31.12	.0536					
				0510	.48	1.64		0554	59.20	.1027					
				0520	.66	1.75		0614	38.40	.1690					
				0530	2.52	2.17		0630	26.17	.2041					
				0538	.45	2.23		0702	8.31	.2416					
				0555	.03	2.24		0744	3.18	.2579					
				0610	.24	2.30		0828	.96	.2641					
				0835	.00	2.30		0842	.68	.2649					
				0840	.48	2.34		0904	.96	.2661					
				0845	.12	2.35		0942	.23	.2675					
								1058	.10	.2683					
								1258	.00	.2687					
				Watershed conditions: 2% of area in mature cotton and corn, fair cover; 4% in pasture and 64% idle, fair to good cover; 29% in woods, good cover; 1% bare gullies.											

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.00408. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.6-5. ^{1/} ISOHYETAL MAP ON P. 62.11-4. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE.



OXFORD, MISSISSIPPI WATERSHED W-19

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED W-241/ AREA—512 ACRES								62.07
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 P ₂ / Q	1.44 .01	3.33 .13	4.31 .51	4.09 .07	5.04 .51	2.06 .00	4.03 .03	3.95 .29	1.46 .06	.00 .00	5.56 .23	3.84 .38	39.11 2.22	
STA AV ₂ /P (57-63) Q	4.02 1.28	4.98 1.55	4.35 .91	4.24 .82	4.05 .54	4.07 .18	4.18 .11	3.24 .11	4.00 .19	2.24 .08	4.86 .59	4.47 .72	48.70 7.08	
MEAN P <u>4</u> / 44 YR	5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	5-27	.30	5-27	.20	8-29	.27	5-27	.31	5-27	.33	5-26	.47	5-26	.51	5-26	.51

MAXIMUMS FOR PERIOD OF RECORD																
19 57 TO 19 63	2-23 1962	1.04	2-23 1962	.90	2-23 1962	1.36	2-23 1962	1.64	2-23 1962	1.86	1-31 1957	2.08	1-30 1957	3.16	1-28 1957	4.37

NOTES: Watershed conditions: About 3% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 35% in pasture and idle land, good cover April to October with fair cover remainder of year; 59% in woods, good cover; 3% in bare gullies. 1/ About 6% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 4 and 30. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.

1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI WATERSHED W-24 62.07							
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.86	.00	.00	.00	.00	.00	.00	.00	.45	.00	
2	.00	.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
3	.00	.00	.00	.00	.00	.00	.22	.00	.20	.00	.00	.00	
4	.00	.00	.44	.00	.00	.00	.00	.00	1.24	.00	.57	.00	
5	.17	.00	.84	.16	.47	.00	.03	.00	.02	.00	.84	.00	
6	.00	.00	.00	1.20	.00	.00	.00	.00	.00	.00	.00	.00	
7	.00	.00	.00	.00	.00	.00	.55	.00	.00	.00	.00	.43	
8	.00	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00	
9	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	
10	.00	1.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.40	
11	.50	.19	1.03	.00	.00	.00	.00	.20	.00	.00	.00	.91	
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
13	.00	.00	.00	.00	.00	.00	1.18	.00	.00	.00	.00	.00	
14	.00	.00	.00	.00	.36	.00	.05	.00	.00	.00	.00	.00	
15	.00	.00	.33	.00	.00	.30	.03	.00	.00	.00	.00	.00	
16	.00	.00	.40	.00	.00	.75	.00	.00	.00	.00	.00	.00	
17	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	
18	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	
19	.07	.10	.00	.12	.00	.04	.00	.05	.00	.00	.00	.00	
20	.00	.00	.00	.00	.00	.29	1.12	.03	.00	.00	2.04	.00	
21	.00	.00	.00	.00	.05	.04	.00	.00	.00	.00	.00	.00	
22	.00	.00	.00	.00	.06	.15	.00	.00	.00	.00	1.06	1.105	
23	.16	.10	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	
24	.00	.00	.00	.13	.00	.38	.00	.00	.00	.00	.00	.00	
25	.00	.14	.21	.90	.15	.00	.00	.00	.00	.00	.00	.00	
26	.10	.00	.00	.00	2.52	.00	.41	.00	.00	.00	.00	.00	
27	.00	.00	.00	.28	1.35	.00	.00	.90	.00	.00	.00	.00	
28	.00	.09	.00	1.12	.08	.11	.00	.00	.00	.00	.54	.00	
29	.25	-----	.00	.18	.00	.00	.09	2.77	.00	.00	.00	.00	
30	.14	-----	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00	
31	.05	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00	
TOTAL	1.44	3.33	4.31	4.09	5.04	2.06	4.03	3.95	1.46	.00	5.56	3.84	
STA AV	4.02	4.98	4.35	4.24	4.05	4.07	4.18	3.24	4.00	2.24	4.86	4.47	

NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 4 AND 30. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.

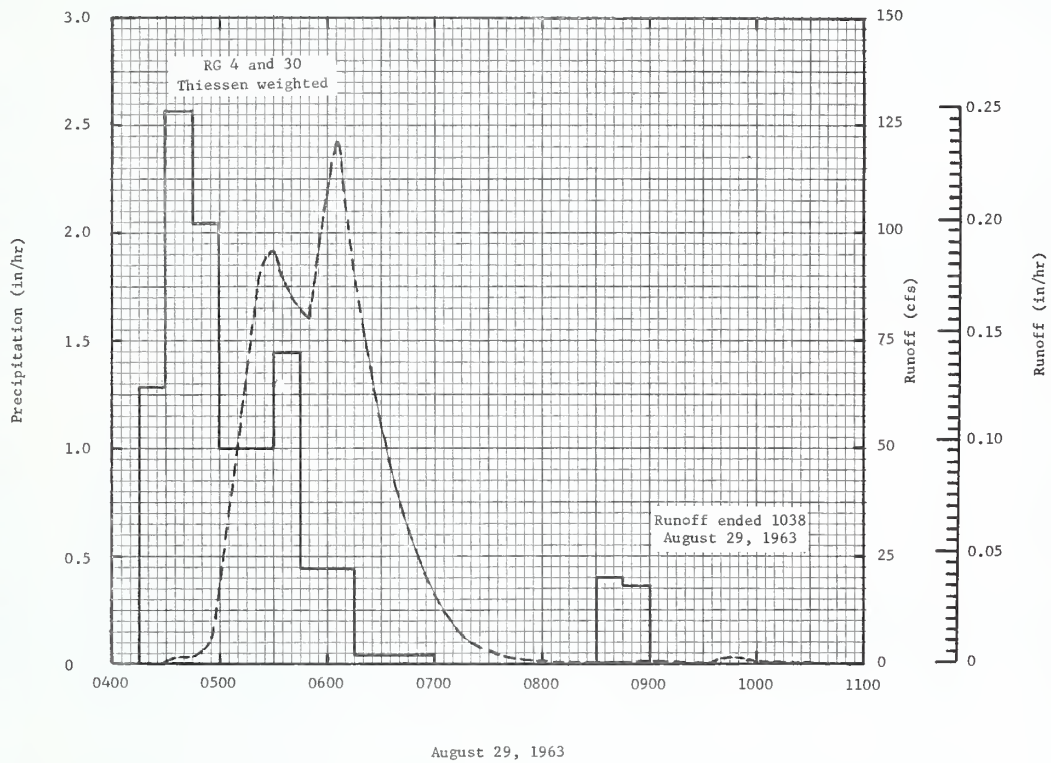
1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI				WATERSHED W-24 62-07			
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	
2	.00	.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
3	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
4	.00	.00	.00	.00	.00	.00	.00	.00	1.36	.00	.00	.00	
5	.00	.00	3.91	.00	.00	.00	.00	.00	.00	.00	.35	.00	
6	.00	.00	.07	.32	.00	.00	.00	.00	.00	.00	.03	.00	
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
10	.00	2.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.34	
11	.23	.22	3.81	.00	.00	.00	.00	.00	.00	.00	.00	5.59	
12	.00	.00	.73	.00	.00	.00	.00	.00	.00	.00	.00	.12	
13	.00	.00	.09	.00	.00	.00	.26	.00	.00	.00	.00	.00	
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
16	.00	.00	1.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	
17	.00	.00	.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	
18	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.00	.00	
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
20	.00	.00	.00	.00	.00	.00	.46	.00	.00	.00	2.76	.00	
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.71	.00	
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
25	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00	.00	
26	.00	.00	.00	.00	3.80	.00	.00	.00	.00	.00	.00	.00	
27	.00	.00	.00	.00	7.13	.00	.00	.00	.00	.00	.00	.03	
28	.00	.00	.00	.26	.01	.00	.00	.00	.00	.00	.05	.00	
29	.00	.00	.00	.90	.00	.00	.00	6.23	.00	.00	.02	.00	
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
MEAN	.01	.10	.35	.05	.35	.00	.02	.20	.05	.00	.16	.26	
INCHES	.01	.13	.51	.07	.51	.00	.03	.29	.06	.00	.23	.38	

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.046488. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1963 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI				WATERSHED W-24 62-07			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)			
Event of August 29, 1963 ^{1/}													
8-29	.00	.0000	8-29	2 RG	AVG 2/		8-29	0428	.00	.0000			
				0415	.00	.00		0436	1.47	.0001			
				0430	1.28	.32		0444	1.90	.0006			
				0445	2.56	.96		0456	6.43	.0021			
				0500	2.04	1.47		0512	57.38	.0186			
				0515	1.00	1.72		0522	87.85	.0420			
				0530	1.00	1.97		0530	96.00	.0657			
				0545	1.44	2.33		0538	86.15	.0892			
				0600	.44	2.44		0550	80.58	.1215			
				0615	.44	2.55		0600	110.32	.1522			
				0630	.04	2.56		0606	120.96	.1746			
				0645	.04	2.57		0622	73.40	.2248			
				0700	.04	2.58		0646	30.60	.2650			
				0830	.00	2.58		0716	6.81	.2831			
				0845	.40	2.68		0738	1.47	.2860			
				0900	.36	2.77		0832	.30	.2876			
								0848	.50	.2878			
								0904	.50	.2880			
								0934	.06	.2882			
								0942	1.27	.2884			
								0958	.30	.2887			
								1038	.00	.2889			

Watershed conditions: 3% of area in mature cotton and corn, fair cover; 3% in pasture, and 32% idle, fair to good cover; 59% in woods, good cover; 3% in bare gullies.

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.001937. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62. 7-4. ^{1/} ISOHYETAL MAP ON P. 62.11-4. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. ^{2/} RAIN GAGES 4 AND 30 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3.



OXFORD, MISSISSIPPI WATERSHED W-24

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI						WATERSHED W-281/ AREA—1,080 ACRES (1.69 SQ. MILES)				62.08	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963	P2/ Q	1.28 .00	2.68 .00	3.89 .01	4.46 .00	4.52 .06	1.67 .00	6.25 .11	3.94 .23	1.82 .06	.00 .00	5.94 .08	4.09 .07	40.54 .62			
	STA AV3/P (57-63) Q	3.88 .49	4.93 .53	4.30 .23	4.19 .25	3.75 .15	4.13 .08	4.48 .09	2.65 .04	4.43 .16	2.28 .04	5.02 .18	4.48 .18	48.52 2.42			
	MEAN P 4/ 44 YR	5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1963	8-29	.14	8-29	.12	8-29	.18	8-29	.23	8-29	.23	8-29	.23	8-29	.23	8-29	.29	
MAXIMUMS FOR PERIOD OF RECORD																	
19 57 TO 19 63	9-9 1959	.58	9-9 1959	.42	9-9 1959	.54	2-23 1962	.70	1-31 1957	.92	1.31 1957	1.45	1-30 1957	2.02	1-27 1957	2.68	
NOTES: Watershed conditions: About 12% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 58% in pasture and idle land, good cover April to October with fair cover remainder of year; 26% in woods, good cover; 4% in bare gullies. 1/ Approximately 60% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 5, 6, and 7. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																	
1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI								WATERSHED W-28 62.08			
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC					
1	.00	.00	.87	.00	.00	.00	.00	.00	.00	.00	.39	.00					
2	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00					
3	.00	.00	.00	.00	.00	.00	.42	.00	.15	.00	.00	.00					
4	.00	.00	.30	.00	.00	.00	.00	.00	1.66	.00	.23	.00					
5	.16	.00	.88	.16	.41	.00	.07	.00	.00	.00	.84	.00					
6	.00	.00	.00	1.14	.02	.00	.01	.00	.00	.00	.00	.00					
7	.00	.00	.00	.00	.00	.00	.39	.02	.00	.00	.00	.00					
8	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00					
9	.00	.00	.18	.00	.00	.00	.00	.00	.00	.00	.00	.00					
10	.00	1.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.51					
11	.39	.19	1.04	.00	.00	.00	.00	.10	.00	.00	.00	1.08					
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00					
13	.00	.00	.00	.00	.00	.00	1.45	.00	.00	.00	.00	.00					
14	.00	.00	.00	.00	.08	.00	.05	.00	.00	.00	.00	.00					
15	.00	.00	.37	.00	.00	.25	.11	.00	.00	.00	.00	.00					
16	.00	.00	.19	.00	.00	.51	.00	.00	.00	.00	.00	.00					
17	.00	.00	.00	.00	.00	.00	.22	.00	.00	.00	.00	.00					
18	.00	.29	.00	.00	.00	.00	1.00	.00	.00	.00	.07	.00					
19	.08	.09	.00	.16	.00	.16	.00	.06	.00	.00	.00	.00					
20	.00	.00	.00	.00	.00	.08	1.42	.02	.00	.00	2.89	.00					
21	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00					
22	.03	.00	.00	.00	.06	.25	.00	.00	.00	.00	.99	1.085					
23	.06	.07	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00					
24	.00	.00	.00	.09	.00	.38	.00	.00	.00	.00	.00	.00					
25	.00	.11	.06	1.13	.19	.00	.00	.00	.00	.00	.00	.00					
26	.09	.00	.00	.00	2.68	.00	.57	.03	.00	.00	.00	.00					
27	.00	.00	.00	.33	.81	.01	.11	.50	.00	.00	.00	.00					
28	.00	.10	.00	1.06	.20	.03	.00	.00	.01	.00	.53	.00					
29	.28	-----	.00	.39	.00	.00	.09	3.21	.00	.00	.00	.00					
30	.17	-----	.00	.00	.00	.00	.15	.00	.00	.00	.00	.00					
31	.02	-----	.00	-----	.00	-----	.04	.00	-----	.00	-----	.00					
TOTAL	1.28	2.68	3.89	4.46	4.52	1.67	6.25	3.94	1.82	.00	5.94	4.09					
STATION	3.88	4.93	4.30	4.19	3.75	4.13	4.48	2.65	4.43	2.28	5.02	4.48					
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIENSEN WEIGHTED FROM RAIN GAGES 5, 6, AND 7. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.																	

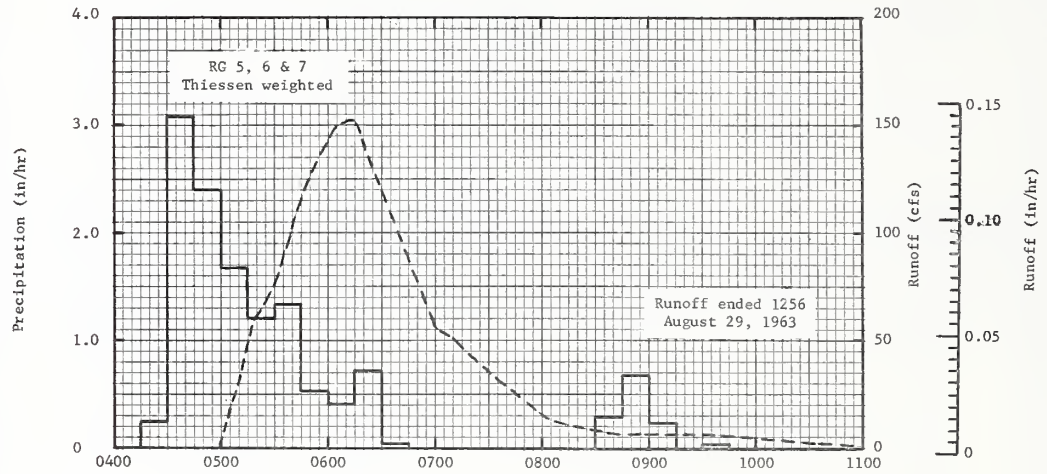
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-28	62.08
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
4	.00	.00	.00	.00	.00	.00	.00	.00	2.72	.00	.00	.00		
5	.00	.00	.46	.00	.00	.00	.00	.00	.00	.00	.00	.00		
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		.44
11	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.77	
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	
13	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
18	.00	.00	.00	.00	.00	.00	1.13	.00	.00	.00	.00	.00	.00	
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
20	.00	.00	.00	.00	.00	.00	3.74	.00	.00	.00	3.35	.00	.00	
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.17	.00	.00	
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
26	.00	.00	.00	.00	1.79	.00	.01	.00	.00	.00	.00	.00	.00	
27	.00	.00	.00	.00	.94	.00	.00	.00	.00	.00	.00	.00	.00	
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
29	.00	-----	.00	.00	.00	.00	.00	10.39	.00	.00	.00	.00	.00	
30	.00	-----	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00	-----	
MEAN	.00	.00	.02	.00	.09	.00	.16	.33	.09	.00	.12	.10		
INCHES	.00	.00	.01	.00	.06	.00	.11	.23	.06	.00	.08	.07		

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0220387. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1963 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI							WATERSHED W-28	62.08
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)				
Event of August 29, 1963 ^{1/}														
8-29	.00	.0000	8-29	3 RG	AVG 2/		8-29	0458	.00	.0000				
				0415	.00	.00		0506	23.09	.0014				
				0430	.24	.06		0518	60.00	.0090				
				0445	3.08	.83		0530	75.28	.0214				
				0500	2.40	1.43		0538	99.10	.0321				
				0515	1.68	1.85		0548	124.60	.0492				
				0530	1.20	2.15		0604	148.40	.0826				
				0545	1.32	2.48		0614	153.50	.1057				
				0600	.52	2.61		0700	55.77	.1793				
				0615	.40	2.71		0710	50.70	.1875				
				0630	.72	2.89		0758	16.00	.2119				
				0645	.04	2.90		0844	6.04	.2197				
				0830	.00	2.90		0932	6.04	.2241				
				0845	.28	2.97		1052	.63	.2282				
				0900	.68	3.14		1232	.04	.2287				
				0915	.24	3.20		1256	.00	.2287				
				0930	.00	3.20								
				0945	.04	3.21								

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0009183. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.8-5. ^{1/} ISOHYETAL MAP ON P. 62.11-4. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. ^{2/} RAIN GAGES 5, 6, AND 7 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3.



August 29, 1963

OXFORD, MISSISSIPPI WATERSHED W-28

MONTHLY PRECIPITATION AND RUNOFF (inches)							OXFORD, MISSISSIPPI WATERSHED W-32 ^{1/} AREA—20,000 ACRES (31.3 SQ. MILES)							62.10		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P ^{2/}	1.37	2.84	4.11	4.15	5.27	2.23	6.36	4.18	3.35	.03	5.48	4.32	43.69		
	Q	.00	.12	.79	.10	1.43	.00	.30	.46	.68	.00	.33	.63	4.84		
STA AV ^{3/} (57-63)	P	3.94	4.99	4.44	4.73	4.33	3.90	4.39	2.88	4.76	2.14	4.97	4.70	50.17		
	Q	1.28	1.69	1.22	1.00	.92	.22	.24	.15	.56	.12	.73	1.10	9.23		
MEAN P ^{4/} 44 YR		5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	5-26	.38	5-26	.36	5-26	.65	5-26	.94	5-26	.96	5-26	1.34	5-26	1.41	5-26	1.41
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO 1963	2-23 1962	.57	2-23 1962	.56	2-23 1962	.83	2-23 1962	1.88	2-23 1962	2.11	2-23 1962	2.34	2-20 1961	2.98	1-27 1957	3.58
NOTES: Watershed conditions: About 23% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 63% in pasture and idle land, good cover April to October with fair cover remainder of year; 12% in woods, good cover; 2% in bare gullies. 1/ About 12% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 10 rain gages. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 DAILY PRECIPITATION (inches)							OXFORD, MISSISSIPPI WATERSHED W-32 62.10									
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.91	.00	.00	.00	.00	.00	.00	.00	.47	.00				
2	.00	.42	.00	.00	.00	.00	.00	.64	.00	.00	.00	.00				
3	.00	.00	.00	.00	.00	.00	.16	.00	.36	.00	.00	.00				
4	.00	.00	.46	.00	.00	.00	.00	.00	2.80	.00	.27	.00				
5	.17	.00	.69	.16	.39	.00	.10	.00	.12	.00	.61	.00				
6	.00	.00	.00	1.10	.06	.00	.00	.00	.00	.00	.00	.00				
7	.00	.00	.00	.00	.00	.00	.38	.00	.00	.00	.00	.43				
8	.00	.00	.00	.00	.01	.00	.15	.00	.00	.00	.00	.00				
9	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	1.47	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.70				
11	.45	.16	1.24	.00	.00	.00	.00	.16	.00	.00	.00	1.14				
12	.00	.00	.00	.00	.00	.00	.00	.50	.00	.00	.00	.00				
13	.00	.00	.00	.00	.00	.00	1.48	.00	.00	.00	.00	.00				
14	.00	.00	.00	.00	.24	.00	.25	.00	.00	.00	.00	.00				
15	.00	.00	.46	.00	.00	.02	.05	.00	.00	.00	.00	.00				
16	.00	.00	.14	.00	.00	.78	.06	.00	.00	.00	.00	.00				
17	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00				
18	.00	.34	.00	.00	.00	.00	.01	.00	.00	.00	.10	.00				
19	.07	.08	.00	.19	.00	.20	.00	.00	.00	.00	.01	.00				
20	.00	.00	.00	.00	.00	.17	1.55	.07	.00	.00	2.51	.00				
21	.00	.00	.00	.00	.02	.56	.00	.00	.00	.00	.00	.00				
22	.01	.00	.00	.00	.07	.10	.00	.00	.00	.00	.96	1.055				
23	.06	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
24	.00	.00	.00	.07	.00	.16	.00	.00	.00	.00	.00	.00				
25	.00	.14	.01	.85	.10	.00	.00	.00	.00	.00	.00	.00				
26	.09	.00	.00	.00	3.16	.00	1.30	.14	.00	.00	.00	.00				
27	.00	.00	.00	.57	1.11	.00	.00	.39	.00	.03	.00	.00				
28	.00	.14	.00	.94	.11	.24	.00	.00	.07	.00	.55	.00				
29	.31	-----	.00	.27	.00	.00	.14	2.28	.00	.00	.00	.00				
30	.17	-----	.00	.00	.00	.00	.43	.00	.00	.00	.00	.00				
31	.04	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00				
TOTAL	1.37	2.84	4.11	4.15	5.27	2.23	6.36	4.18	3.35	.03	5.48	4.32				
STA AV	3.94	4.99	4.44	4.73	4.33	3.90	4.39	2.88	4.76	2.14	4.97	4.70				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 3, 10-14, 20, 21, 24, AND 26. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.																

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-32 62.10	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	53.28	.03	.46	.00	.00	.01	.02	.00	.00	.00		
2	.00	.10	2.05	.02	.04	.00	.00	6.90	.01	.00	.00	.00		
3	.00	.06	.18	.02	.01	.00	.00	.76	.01	.00	.00	.00		
4	.00	.01	.18	.01	.00	.00	.00	.00	548.64	.00	.00	.00		
5	.00	.01	217.50	.00	2.03	.00	.00	.00	25.09	.00	.00	.00		
6	.00	.00	14.05	.62	13.62	.00	.01	.00	.01	.00	.00	.00		
7	.00	.00	4.36	.25	.16	.00	1.06	.00	.00	.00	.00	.00		
8	.00	.01	2.39	.04	.00	.00	.15	.00	.00	.00	.00	.00		
9	.00	.01	4.57	.00	.00	.00	.00	.00	.00	.00	.00	.00		
10	.00	48.47	2.10	.00	.00	.00	.00	.00	.00	.00	.00	.00		
11	.24	49.26	295.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	441.92	
12	.04	1.22	45.72	.00	.00	.00	.00	12.75	.00	.00	.00	.00	31.28	
13	.00	.12	7.08	.00	.00	.00	30.36	.10	.00	.00	.00	.00	2.88	
14	.00	.00	4.18	.00	.16	.00	4.01	.00	.00	.00	.00	.00	.00	
15	.00	.00	4.44	.00	.14	.00	.04	.00	.00	.00	.00	.00	.00	
16	.00	.00	5.99	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	
17	.00	.00	1.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
18	.00	.00	.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
19	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
20	.00	.00	.10	.00	.00	.00	163.84	.00	.00	.00	.00	.00	207.04	
21	.00	.01	.11	.00	.00	.39	16.20	.00	.00	.00	.00	.00	24.79	
22	.00	.00	.54	.00	.00	.54	.01	.00	.00	.00	.00	.00	26.09	
23	.00	.00	.11	.00	.00	.09	.01	.00	.00	.00	.00	.00	21.67	
24	.00	.00	.15	.00	.00	.00	.01	.00	.01	.00	.00	.00	.02	
25	.00	.00	.15	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	
26	.00	.01	.04	.00	812.34	.00	11.93	.00	.00	.00	.00	.00	.76	
27	.00	.01	.00	.13	369.00	.00	4.94	.09	.00	.00	.00	.00	3.28	
28	.00	.02	.00	3.72	1.65	.00	.43	.07	.00	.00	.00	.00	1.21	
29	.00	-----	.00	68.91	.06	.00	4.94	361.81	.00	.00	.00	.00	.02	
30	.00	-----	.00	6.81	.00	.00	14.73	.64	.00	.00	.00	.00	.08	
31	.00	.02	-----	-----	.00	-----	.08	.04	-----	.00	-----	.01	.01	
MEAN	.01	3.54	21.47	2.68	38.70	.03	8.15	12.36	19.13	.00	9.32	16.96		
INCHES	.00	.12	.79	.10	1.43	.00	.30	.46	.68	.00	.33	.63		

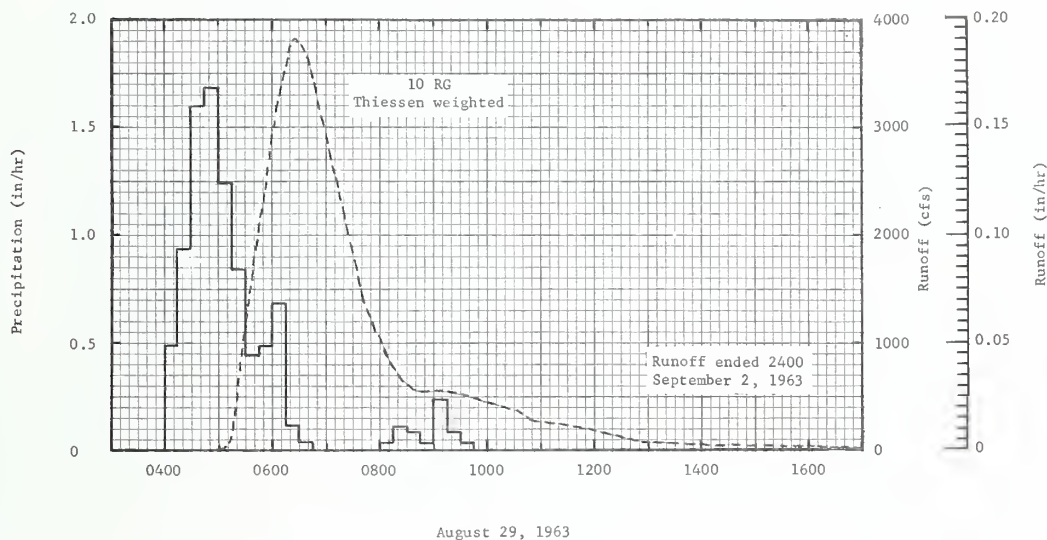
NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0011901. QUALITY OF RECORDS: GOOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL.

1963 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI						WATERSHED W-32		62.10	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)					
Event of August 29-31, 1963 1/															
8-29	.00	.0000	8-29	10 RG	AVG 2/		8-29	0416	.00	.0000					
				0400	.00	.00		0444	3.03	.0000					
				0415	.48	.12		0510	37.31	.0004					
				0430	.88	.34		0516	247.00	.0011					
				0445	1.60	.74		0528	1084.00	.0077					
				0500	1.68	1.16		0554	2588.00	.0472					
				0515	1.24	1.47		0628	3821.00	.1372					
				0530	.84	1.68		0640	3655.00	.1743					
				0545	.44	1.79		0740	1472.00	.3015					
				0600	.48	1.91		0822	683.84	.3389					
				0615	.68	2.08		0840	554.91	.3481					
				0630	.12	2.11		0906	559.68	.3601					
				0645	.04	2.12		0956	450.00	.3810					
				0800	.00	2.12		1012	410.00	.3867					
				0815	.04	2.13		1036	365.00	.3944					
				0830	.12	2.16		1048	291.00	.3976					
				0845	.08	2.18		1116	257.00	.4039					
				0900	.04	2.19		1220	141.20	.4145					
				0915	.24	2.25		1256	86.73	.4179					
				0930	.08	2.27		1404	51.51	.4217					
				0945	.04	2.28		1638	16.59	.4261					
								2144	12.06	.4297					
								2244	6.95	.4302					
								2400	3.80	.4305					
							8-30	0134	1.81	.4307					

Continued on next page

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000496. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.10-5. 1/ ISOHYETAL MAP ON P. 62.11-4. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 2/ RAIN GAGES 3, 10-14, 20, 21, 24, AND 26 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3.

1963			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-32				62.10			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF											
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)								
			Event of August 29-31, 1963—Continued															
Watershed conditions: 23% of area in mature cotton and corn, fair cover; 14% in pasture, and 49% idle, fair to good cover; 12% in woods, good cover; 2% in bare gullies.							8-31				1126				.14		.4312	
											2400				.05		.4313	
											2400				1/ .02		.4313	



OXFORD, MISSISSIPPI WATERSHED W-32

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI				WATERSHED W-341/				62.11		
						AREA--75,000 ACRES (117.2 SQ. MILES)										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
YEAR																
1963 P ₂ /	1.37	3.12	4.47	4.25	4.74	1.79	5.70	4.23	2.88	.07	5.33	4.07	42.02			
Q ₃ /	.37	.53	1.26	.54	1.11	.33	.58	.74	.80	.31	.46	.78	7.81			
STA AV ₄ /P	3.93	4.92	4.40	4.56	3.99	4.06	4.40	3.26	4.49	2.14	4.81	4.63	49.59			
(57-63) Q	1.51	1.78	1.52	1.21	1.01	.55	.60	.47	.83	.40	.99	1.32	12.19			
MEAN P ₅ /	5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09			
44 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-29	.07	8-29	.07	8-29	.14	8-29	.34	9-4	.43	5-26	.64	5-26	.76	8-29	1.03
MAXIMUMS FOR PERIOD OF RECORD																
19 57 TO	2-23	.14	2-23	.14	2-23	.27	2-23	.78	2-23	1.35	2-23	1.88	1-30	2.18	1-28	3.28
19 63	1962		1962		1962		1962		1962		1962		1957		1957	
NOTES: Watershed conditions: About 22% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 55% in pasture and idle land, good cover April to October with fair cover remainder of year; 21% in woods, good cover; 2% in bare gullies. 1/ About 15% of area, principally in upper reaches, above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 32 rain gages. 3/ Monthly values of runoff include relatively insignificant flow through auxiliary station 34-A. 4/ Precipitation and runoff records began Jan. 1957. 5/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI				WATERSHED W-34				62.11		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.94	.00	.00	.00	.00	.00	.00	.00	.46	.00				
2	.00	.45	.00	.00	.00	.00	.00	.28	.00	.00	.00	.00				
3	.00	.00	.00	.00	.00	.00	.18	.00	.38	.00	.00	.00				
4	.00	.00	.47	.00	.00	.00	.00	.00	2.38	.00	.39	.00				
5	.17	.00	.82	.15	.36	.00	.14	.00	.04	.00	.64	.00				
6	.00	.00	.00	1.11	.02	.00	.00	.00	.00	.00	.00	.00				
7	.00	.00	.00	.00	.00	.00	.45	.00	.00	.00	.00	.00				
8	.00	.00	.00	.00	.00	.00	.17	.00	.00	.00	.00	.00				
9	.00	.00	.19	.00	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	1.73	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
11	.44	.16	1.35	.00	.00	.00	.00	.14	.00	.00	.00	.99				
12	.00	.00	.00	.00	.00	.00	.01	.14	.00	.00	.00	.00				
13	.00	.00	.00	.00	.00	.00	1.61	.03	.00	.00	.00	.00				
14	.00	.00	.00	.00	.35	.00	.26	.00	.00	.00	.00	.00				
15	.00	.00	.38	.00	.00	.21	.04	.00	.00	.00	.00	.00				
16	.00	.00	.26	.00	.00	.60	.03	.00	.00	.00	.00	.00				
17	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00				
18	.00	.31	.00	.00	.00	.00	.08	.00	.00	.00	.08	.00				
19	.08	.09	.00	.15	.00	.10	.00	.02	.00	.00	.01	.00				
20	.00	.00	.00	.00	.00	.24	1.18	.07	.00	.00	2.26	.00				
21	.00	.00	.00	.00	.03	.15	.00	.00	.00	.00	.00	.00				
22	.00	.00	.00	.00	.05	.11	.00	.00	.00	.00	.97	1.09				
23	.12	.11	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00				
24	.00	.00	.00	.10	.00	.22	.00	.00	.00	.00	.00	.00				
25	.00	.14	.06	.94	.13	.03	.00	.00	.00	.00	.00	.00				
26	.09	.00	.00	.00	2.69	.00	.77	.08	.00	.00	.00	.00				
27	.00	.00	.00	.42	1.00	.01	.61	.55	.00	.07	.00	.00				
28	.00	.13	.00	1.04	.11	.12	.00	.00	.08	.00	.52	.00				
29	.27	-----	.00	.34	.00	.00	.20	2.92	.00	.00	.00	.00				
30	.16	-----	.00	.00	.00	.00	.33	.00	.00	.00	.00	.00				
31	.04	-----	.00	-----	.00	-----	.02	.00	-----	.00	-----	.00				
TOTAL	1.37	3.12	4.47	4.25	4.74	1.79	5.70	4.23	2.88	.07	5.33	4.07				
STA AV	3.93	4.92	4.40	4.56	3.99	4.06	4.40	3.26	4.49	2.14	4.81	4.63				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 1-31, AND 33. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.																

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI						WATERSHED W-34		62.11
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	33.49	43.19	286.85	38.47	43.37	38.17	33.76	31.37	32.44	30.63	35.58	35.29		
2	33.14	52.71	81.27	37.96	40.41	37.52	33.07	37.07	32.10	29.89	35.98	34.56		
3	33.48	55.11	45.37	37.39	38.50	35.02	33.76	46.56	43.19	28.80	34.53	34.96		
4	33.81	46.52	42.17	37.89	36.98	31.37	34.09	31.03	1515.01	28.44	31.66	36.52		
5	34.93	41.15	897.81	36.54	36.98	32.07	34.46	31.03	139.75	29.16	30.99	36.95		
6	34.60	44.44	110.55	71.98	57.09	32.07	35.18	30.11	27.63	29.52	32.40	36.51		
7	34.20	45.76	45.46	65.17	36.39	30.77	37.72	30.11	25.29	29.16	32.74	35.30		
8	34.68	44.05	33.84	42.72	33.42	30.77	39.63	30.77	26.50	29.16	33.08	34.21		
9	34.51	42.73	35.40	37.54	32.75	22.40	37.09	30.07	26.49	29.52	33.74	34.21		
10	34.51	291.31	36.11	35.25	32.74	32.40	34.81	29.64	27.23	29.52	34.09	48.18		
11	39.85	262.76	1098.90	34.47	32.74	32.07	35.21	29.15	28.47	29.89	32.72	1205.92		
12	39.22	72.04	270.22	34.11	33.08	32.07	35.21	29.15	29.39	30.26	32.37	200.82		
13	35.65	52.62	58.39	32.74	32.37	31.72	118.63	31.58	29.81	30.63	33.74	47.19		
14	35.65	41.27	36.62	32.08	58.99	32.40	189.97	28.46	31.11	30.63	33.74	37.19		
15	35.65	34.28	40.47	32.08	40.57	33.76	40.76	29.15	32.74	30.26	34.09	33.86		
16	36.50	35.22	77.65	33.09	33.12	38.04	34.19	28.93	33.07	30.99	33.76	31.77		
17	35.72	37.44	170.50	34.45	32.08	36.68	32.41	28.72	32.40	32.40	34.53	31.07		
18	35.72	40.08	61.30	33.76	32.41	32.40	32.41	28.94	30.77	32.74	35.21	31.07		
19	39.33	44.84	47.47	34.53	33.42	34.13	31.37	28.46	30.40	32.74	34.81	30.70		
20	41.71	44.83	41.15	34.53	34.09	36.57	228.20	28.67	30.67	33.07	290.42	30.33		
21	40.39	40.59	39.07	33.76	34.46	37.88	235.00	28.67	30.07	31.66	92.11	30.33		
22	40.39	38.53	38.50	34.09	34.81	36.93	33.43	27.98	30.40	31.66	86.72	35.33		
23	42.45	39.71	37.93	34.09	33.08	35.98	33.42	28.67	31.70	32.74	123.89	37.42		
24	41.76	68.64	38.50	33.42	32.40	35.21	31.70	28.93	32.41	33.08	34.60	34.16		
25	38.64	35.72	43.56	53.10	35.47	35.65	32.37	29.42	32.07	32.73	32.47	34.16		
26	38.64	34.88	43.55	40.00	1362.75	35.31	66.74	29.85	32.07	31.36	31.06	42.20		
27	40.33	34.88	40.37	42.46	999.42	34.86	64.48	29.85	33.42	32.37	29.24	47.43		
28	40.33	35.28	40.37	96.20	79.46	35.58	33.43	29.16	32.72	33.41	28.89	40.05		
29	41.75	-----	39.67	470.13	49.15	34.81	45.45	1391.41	32.04	32.74	35.01	34.91		
30	46.49	-----	38.60	100.25	40.41	34.44	67.42	54.34	32.74	32.74	37.83	34.52		
31	46.49	-----	37.40	-----	41.01	-----	45.51	33.12	-----	34.13	-----	34.51		
MEAN	37.85	59.66	127.58	57.14	112.71	34.30	58.74	75.70	84.14	31.16	48.73	79.08		
INCHES	.37	.53	1.26	.54	1.11	.33	.58	.74	.80	.31	.46	.78		

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0001736. QUALITY OF RECORDS: GOOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL. DAILY DISCHARGE VALUES INCLUDE RELATIVELY INSIGNIFICANT FLOW THROUGH AUXILIARY STATION 34-A.

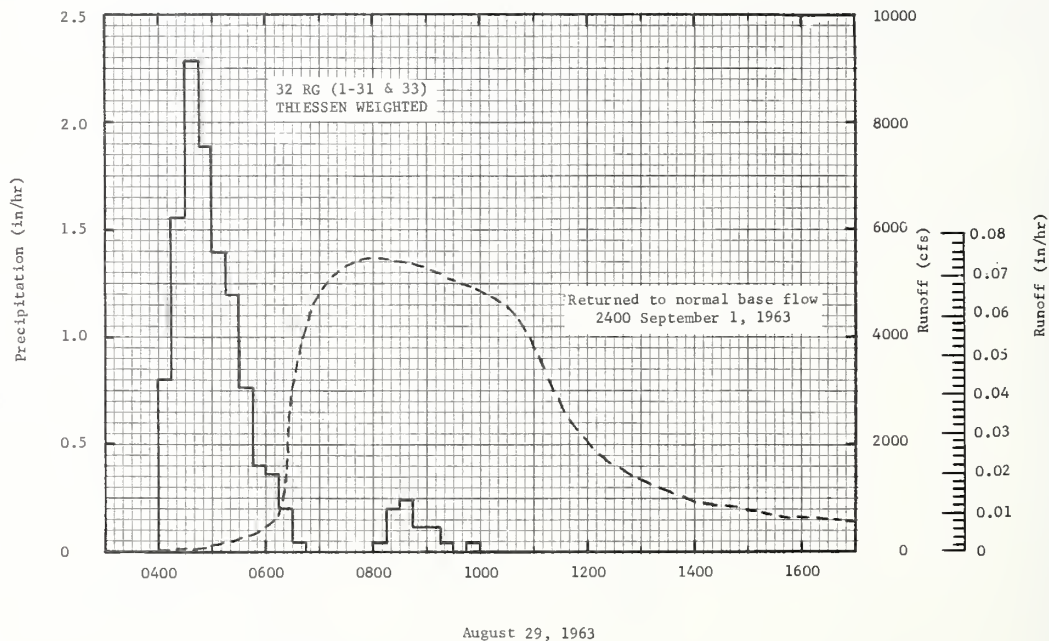
1963			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-34				62.11	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of August 29 - September 1, 1963 ^{1/}																
8-29	2/.00	2/.0000	8-29	32 RG	AVG ^{3/}		8-28	2400	29.36	.0000						
				0400	.00	.00	8-29	0330	33.72	.0014						
				0415	.80	.20		0400	29.78	.0016						
				0430	1.56	.59		0430	43.40	.0019						
				0445	2.28	1.16		0452	81.46	.0022						
				0500	1.88	1.63		0500	112.09	.0024						
				0515	1.40	1.98		0528	209.28	.0034						
				0530	1.20	2.28		0552	387.31	.0050						
				0545	.76	2.47		0600	487.33	.0057						
				0600	.40	2.57		0614	663.35	.0075						
				0615	.36	2.66		0626	2450.16	.0116						
				0630	.20	2.71		0630	3053.60	.0140						
				0645	.04	2.72		0640	3886.51	.0217						
				0700	.00	2.72		0658	4746.34	.0388						
				0715	.00	2.72		0716	5186.17	.0585						
				0800	.00	2.72		0736	5375.98	.0818						
				0815	.04	2.73		0758	5485.78	.1081						
				0830	.20	2.78		0824	5405.53	.1393						
				0845	.24	2.84		0900	5273.94	.1817						
				0900	.12	2.87		0930	5057.40	.2158						
				0915	.12	2.90		1000	4866.74	.2487						
				0930	.04	2.91		1012	4789.87	.2614						
				0945	.00	2.91		1036	4450.42	.2859						
				1000	.04	2.92		1102	3701.00	.3092						

Continued on next page

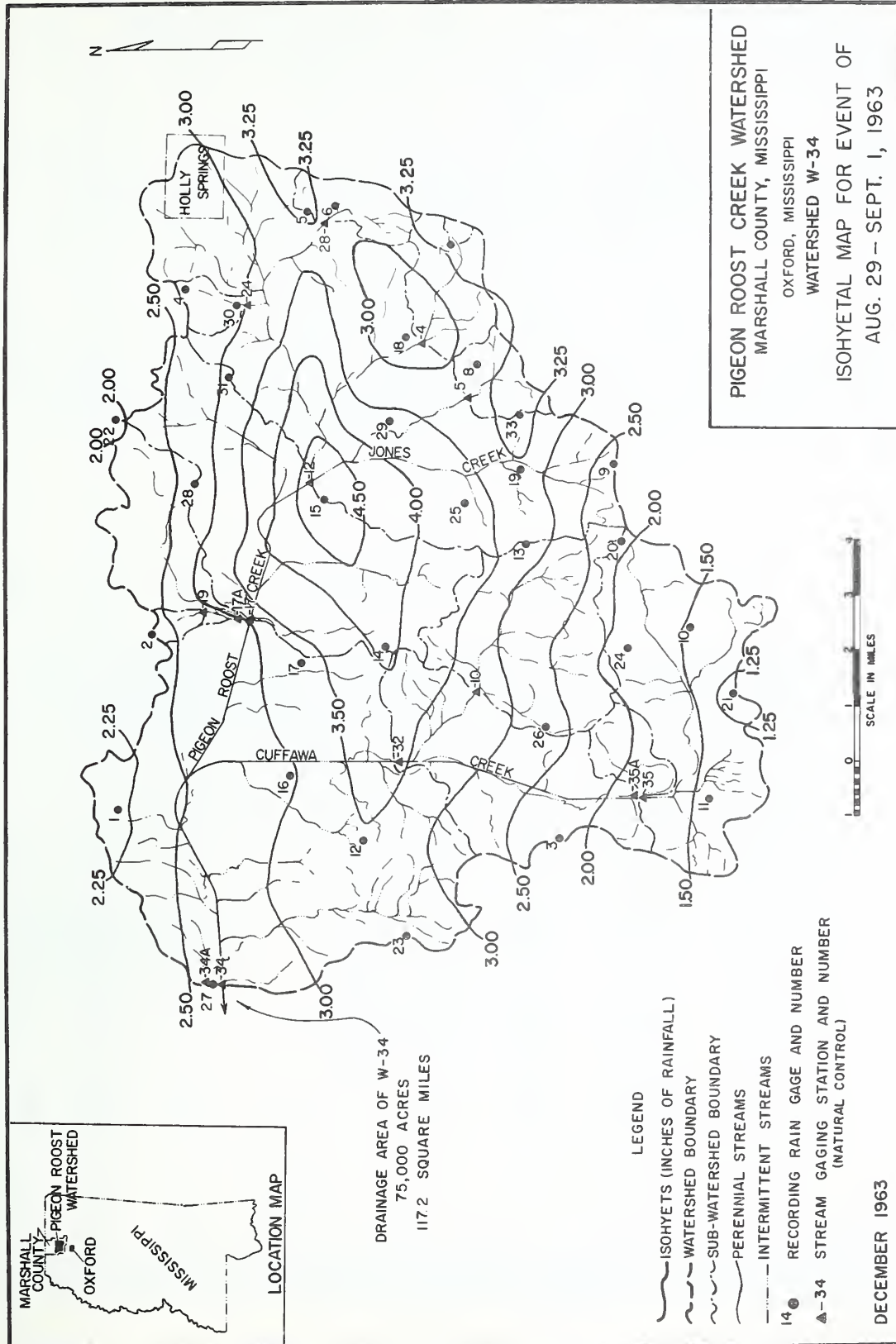
NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.00001322. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.11-4. ^{1/} ISOHYETAL MAP ON P. 62.11-4.2/FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. ^{3/} RAIN GAGES 1-31, AND 33 THIESSEN WEIGHTED.

1963			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-34				62.11	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)					DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
			Event of August 29 - September 1, 1963— Continued							1130						
			TOTALS	EACH	RAIN	GAGE				1134						
			RG 1	2.15	RG 17	3.26				2635.57						
			RG 2	2.35	RG 18	2.64				1208						
			RG 3	2.13	RG 19	3.23				1248						
			RG 4	2.60	RG 20	2.06				1350						
										1400						
			RG 5	3.29	RG 21	1.20				1406						
			RG 6	3.16	RG 22	1.96				920.68						
			RG 7	3.35	RG 23	3.39				1426						
			RG 8	3.15	RG 24	1.72				1446						
			RG 9	2.32	RG 25	3.64				838.27						
										1454						
			RG 10	1.48	RG 26	2.71				1534						
			RG 11	1.43	RG 27	2.64				679.98						
			RG 12	3.46	RG 28	2.65				.3993						
			RG 13	3.36	RG 29	3.60				.3834						
			RG 14	4.08	RG 30	2.95				.3874						
										.3913						
			RG 15	4.85	RG 31	3.05				.3927						
			RG 16	2.95	RG 33	3.42				.3993						
										.4032						
										.4052						
										.4149						
										.4221						
										.4280						
										.4299						
										.4348						
										.4391						
										.4419						
										.4450						
										.4478						
										.4486						
										.4510						
										.4536						
										.4573						
										.4592						
										.4697						
										.4800						

NOTES: 1/ NORMAL BASE FLOW.



OXFORD, MISSISSIPPI WATERSHED W-34



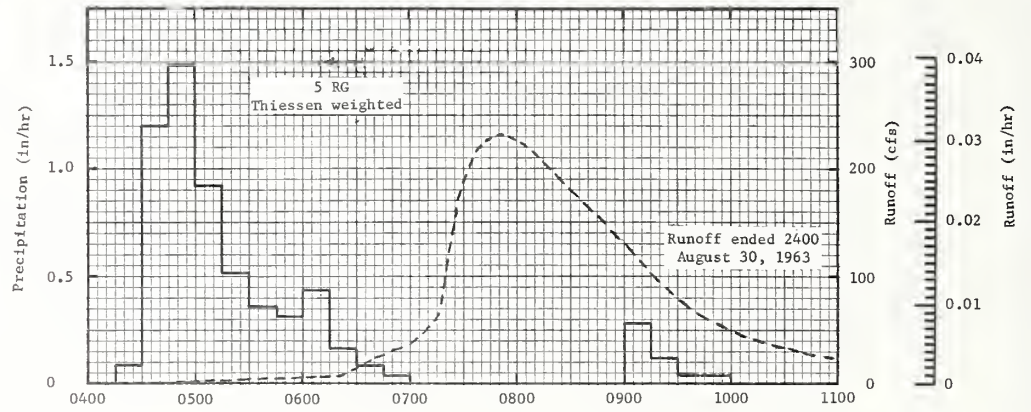
MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI								WATERSHED W-35 1/2		62.12			
						AREA—7,550 ACRES (11.8 SQ. MILES)													
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL					
1963	P 2/	1.25	2.68	3.90	4.22	6.69	2.21	6.12	3.75	4.11	.00	4.74	4.28	43.95					
	Q	.00	.10	.63	.11	2.63	.00	.36	.16	1.01	.00	.07	.51	5.58					
STA AV 3/	P	3.87	4.96	4.43	4.74	4.56	3.90	4.22	2.61	5.04	2.06	4.88	4.67	49.94					
	(57-63) Q	1.59	1.85	1.29	1.12	1.01	.19	.16	.04	.54	.05	.70	1.14	9.68					
MEAN P 4/																			
44 YR		5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09					
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																			
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS				
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME			
1963	5-26	.88	5-26	.84	5-26	1.48	5-26	1.97	5-26	1.99	5-26	2.56	5-26	2.61	5-26	2.61			
MAXIMUMS FOR PERIOD OF RECORD																			
1957 TO 1963	5-26	.88	5-26	.84	5-26	1.48	2-23	2.19	2-23	2.43	2-23	2.69	1-30	3.46	1-27	4.46			
NOTES: Watershed conditions: About 20% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 72% in pasture and idle land, good cover April to October with fair cover remainder of year; 6% in woods, good cover; 2% in bare gullies. 1/ About 8% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 5 rain gages. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																			
1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI										WATERSHED W-35		62.12	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC							
1	.00	.00	.91	.00	.00	.00	.00	.00	.00	.00	.46	.00							
2	.00	.38	.00	.00	.00	.00	.00	.80	.00	.00	.00	.00							
3	.00	.00	.00	.00	.00	.00	.27	.00	.64	.00	.00	.00							
4	.00	.00	.44	.00	.00	.00	.00	.00	3.23	.00	.23	.00							
5	.17	.00	.52	.18	.53	.00	.02	.00	.18	.00	.44	.00							
6	.00	.00	.00	1.06	.13	.00	.00	.00	.00	.00	.00	.00							
7	.00	.00	.00	.00	.00	.00	.24	.00	.00	.00	.00	.42							
8	.00	.00	.00	.00	.00	.00	.15	.00	.00	.00	.00	.00							
9	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00							
10	.00	1.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.68							
11	.34	.17	1.25	.00	.00	.00	.00	.19	.00	.00	.00	1.14							
12	.00	.00	.00	.00	.00	.00	.00	.77	.00	.00	.00	.00							
13	.00	.00	.00	.00	.00	.00	1.27	.00	.00	.00	.00	.00							
14	.00	.00	.00	.00	.30	.00	.17	.00	.00	.00	.00	.00							
15	.00	.00	.48	.00	.00	.00	.07	.00	.00	.00	.00	.00							
16	.00	.00	.09	.00	.00	.85	.14	.00	.00	.00	.00	.00							
17	.00	.00	.00	.00	.00	.00	.26	.00	.00	.00	.00	.00							
18	.00	.34	.00	.00	.00	.00	.02	.00	.00	.00	.10	.00							
19	.07	.08	.00	.21	.00	.27	.00	.00	.00	.00	.01	.00							
20	.00	.00	.00	.00	.00	.14	1.63	.06	.00	.00	2.01	.00							
21	.00	.00	.00	.00	.01	.60	.00	.00	.00	.00	.00	.00							
22	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00	.96	1.045							
23	.03	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							
24	.00	.00	.00	.05	.00	.22	.00	.00	.00	.00	.00	.00							
25	.00	.14	.01	.87	.11	.00	.00	.00	.00	.00	.00	.00							
26	.09	.00	.00	.00	4.01	.00	1.36	.04	.00	.00	.00	.00							
27	.00	.00	.00	.57	1.37	.00	.00	.38	.00	.00	.00	.00							
28	.00	.14	.00	.86	.15	.13	.00	.00	.06	.00	.53	.00							
29	.36	-----	.00	.42	.00	.00	.03	1.51	.00	.00	.00	.00							
30	.15	-----	.00	.00	.00	.00	.49	.00	.00	.00	.00	.00							
31	.04	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00							
TOTAL	1.25	2.68	3.90	4.22	6.69	2.21	6.12	3.75	4.11	.00	4.74	4.28							
STA AV	3.87	4.96	4.43	4.74	4.56	3.90	4.22	2.61	5.04	2.06	4.88	4.67							
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 10, 11, 20, 21, AND 24. STATION AVERAGE IS FOR 7-YR RECORD PERIOD 1957-63.																			

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-35	62.12
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	28.65	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.43	.00	.00	.00	.00	11.98	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.11	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	313.09	.00	.01	.00	.00	.00
5	.00	.00	54.18	.00	6.74	.00	.00	.00	7.69	.00	.93	.00	.00	.00
6	.00	.00	3.39	.10	1.57	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	12.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17.25
11	.00	19.18	106.25	.00	.00	.00	.00	.15	.00	.00	.00	.00	136.87	.00
12	.00	.52	6.90	.00	.00	.00	.00	17.15	.00	.00	.00	.00	5.47	.00
13	.00	.00	.01	.00	.00	.00	4.57	.04	.00	.00	.00	.00	.21	.00
14	.00	.00	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	1.17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.07	.00	.00	.00	.34	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	94.11	.00	.00	.00	.00	19.86	.00	.00
21	.00	.00	.00	.00	.00	.00	4.21	.00	.00	.00	.01	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.63	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.24	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	629.88	.00	8.11	.00	.00	.00	.00	.49	.00	.00
27	.00	.00	.00	.08	197.05	.00	.68	.00	.00	.00	.00	.21	.00	.00
28	.00	.00	.00	.24	.00	.00	.00	.00	.00	.00	.17	.00	.00	.00
29	.00	-----	.00	33.96	.00	.00	.00	22.33	.00	.00	.02	.00	.00	.00
30	.00	-----	.00	1.22	.00	.00	.37	.02	.00	.00	.00	.00	.00	.00
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00	.00	.00
MEAN	.00	1.14	6.50	1.19	26.94	.00	3.64	1.67	10.69	.00	.76	5.18	.00	.00
INCHES	.00	.10	.63	.11	2.63	.00	.36	.16	1.01	.00	.07	.51	.00	.00

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0031526. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1963			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-35		62.12				
ANTECEOENT CONOITIONS			RAINFALL				RUNOFF										
DATE MD-DAY	RAINFALL (inches)	RUNDFF (inches)	DATE MD-DAY	TIME DF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)							
Event of August 29-30, 1963 ¹ / ₁																	
8-29	.00	.0000	8-29	5 RG	AVG 2/		8-29	0438	.00	.0000							
				0415	.00	.00		0454	2.68	.0000							
				0430	.08	.02		0518	2.68	.0001							
				0445	1.20	.32		0546	5.20	.0004							
				0500	1.48	.69		0618	7.41	.0008							
				0515	.92	.92		0640	24.91	.0016							
				0530	.52	1.05		0700	37.42	.0030							
				0545	.36	1.14		0716	64.48	.0047							
				0600	.32	1.22		0726	170.32	.0073							
				0615	.44	1.33		0738	220.73	.0124							
				0630	.16	1.37		0752	231.52	.0194							
				0645	.08	1.39		0810	214.43	.0282							
				0700	.04	1.40		0858	134.28	.0465							
				0900	.00	1.40		0934	77.36	.0548							
				0915	.28	1.47		1042	29.76	.0628							
				0930	.12	1.50		1140	16.00	.0657							
				0945	.04	1.51		1232	8.93	.0671							
				1000	.04	1.52		1330	4.82	.0680							
											1522	3.21	.0690				
												1742	1.77	.0697			
											2038	.50	.0702				
											2400	.18	.0703				
											0300	.01	.0704				
											2400	.00	.0704				
Watershed conditions: 20% of area in mature cotton and corn, fair cover; 19% in pasture and 53% idle, fair to good cover; 6% in woods, good cover; 2% in bare gullies.																	

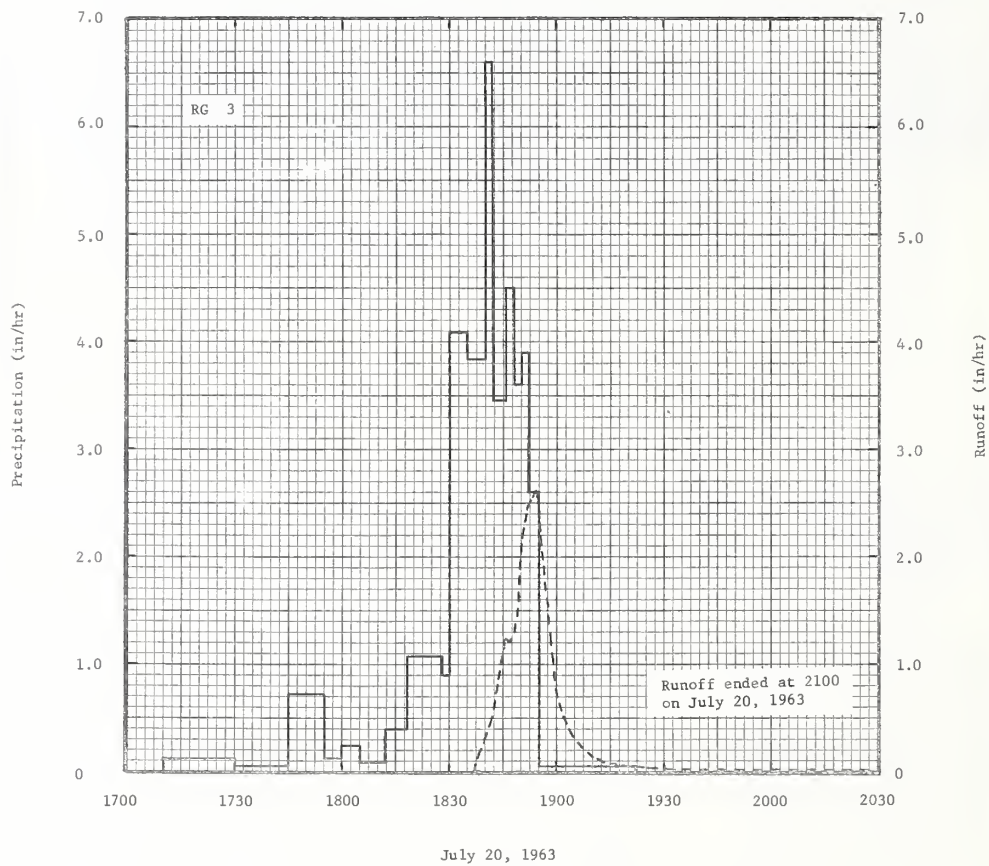
NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0001314. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.12-5. 1/ ISOHYETAL MAP ON P. 62.11-4. FOR 30-DAY ANTECEDENT P & Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 2/ RAIN GAGES 10, 11, 20, 21, AND 24 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3.



August 29, 1963

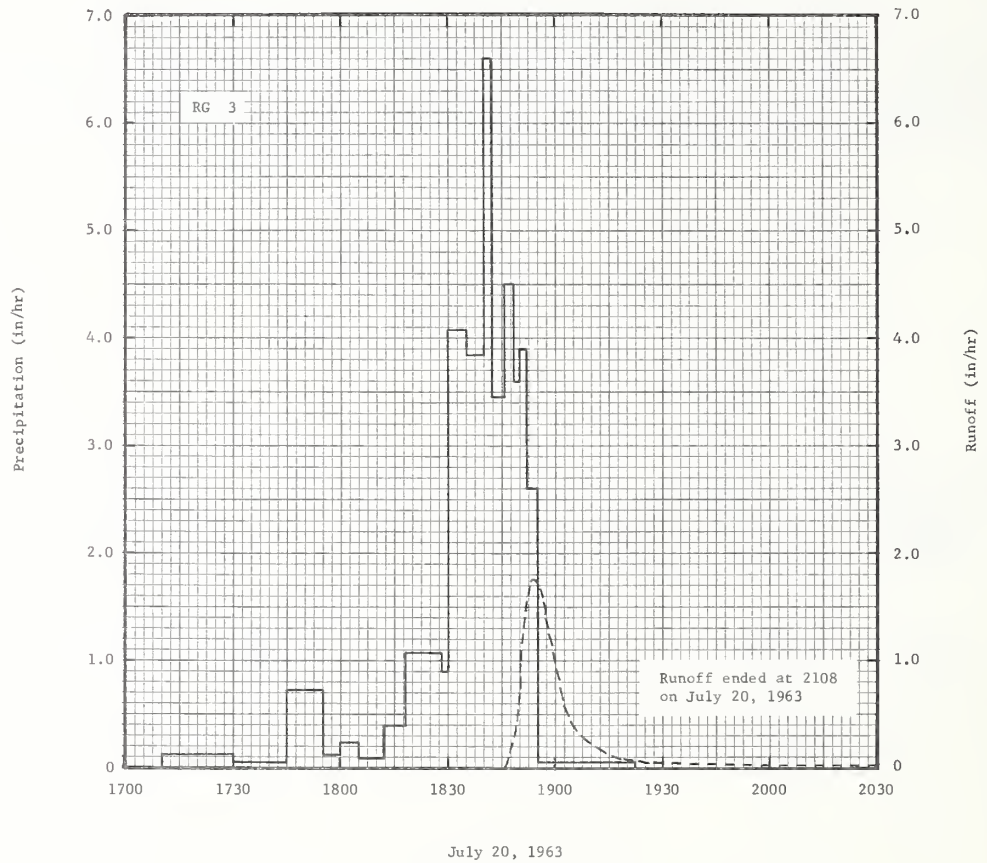
OXFORD, MISSISSIPPI WATERSHED W-35

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED WC-1 AREA—3.88 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/ Q	1.56 .04	3.35 1.03	4.99 1.98	4.80 .96	5.07 1.77	1.77 .00	4.09 .59	2.55 .29	1.47 .18	.00 .00	4.73 .44	3.21 .97	37.59 8.25			
STA AV2/P (58-63) Q	3.40 1.48	4.56 1.86	4.87 2.00	4.13 .75	4.38 1.30	4.34 1.16	4.33 .81	4.03 1.06	3.19 .72	2.12 .44	4.07 .97	4.38 1.59	47.80 14.14			
MEAN P 3/ 44 YR	5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (Inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-29	3.81	5-27	.71	5-27	.79	5-26	.96	5-26	.97	5-26	1.76	5-26	1.77	5-26	1.77
MAXIMUMS FOR PERIOD OF RECORD																
19 58 to 19 63	6-10 1961	7.34	6-10 1961	1.94	6-10 1961	1.98	1-22 1962	2.45	1-22 1962	2.71	1-22 1962	2.71	6-10 1959	2.76	12-9 1961	4.26
NOTES: Watershed conditions: 100% of area cultivated in corn, low plant population, low crop yields, poor winter cover provided by crop residue. 1/ Precipitation data from rain gage 3. 2/ Precipitation and runoff records began Jan. 1958. 3/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI WATERSHED WC-1										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 20, 1963																
	RG 3		7-20	RG	3		7-20									
6-20	.44	.000		1710	.00	.00		1837	.000	.000						
6-21	.02	.000		1730	.12	.04		1838	.169	.001						
6-24	.37	.000		1745	.04	.05		1840	.332	.009						
6-27	.06	.000		1755	.72	.17		1842	.514	.023						
6-28	.07	.000		1800	.12	.18		1844	1.025	.047						
6-30	.16	.000		1805	.24	.20		1846	1.229	.086						
7-3	.10	.000		1812	.09	.21		1847	1.201	.106						
7-7	.34	.000		1818	.40	.25		1849	1.618	.151						
7-8	.05	.000		1828	1.08	.43		1851	2.270	.217						
7-13	.98	.000		1830	.90	.46		1852	2.438	.256						
7-15	.02	.000		1835	4.08	.80		1854	2.607	.340						
7-17	.02	.000		1840	3.84	1.12		1855	2.438	.382						
				1842	6.60	1.34		1856	2.109	.420						
				1846	3.45	1.57		1858	1.201	.475						
				1848	4.50	1.72		1900	.721	.507						
				1850	3.60	1.84		1904	.332	.541						
				1852	3.90	1.97		1913	.087	.569						
				1855	2.60	2.10		1933	.013	.582						
				1922	.04	2.12		2100	.000	.586						
Watershed conditions: 100% of area in corn, 6 to 8 ft. high, approximately 5000 plants per acre, last tillage operation 6-4-63. Row direction ranged from approximate contour to up and down hill.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.912. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.16-4.																



OXFORD, MISSISSIPPI WATERSHED WC-1

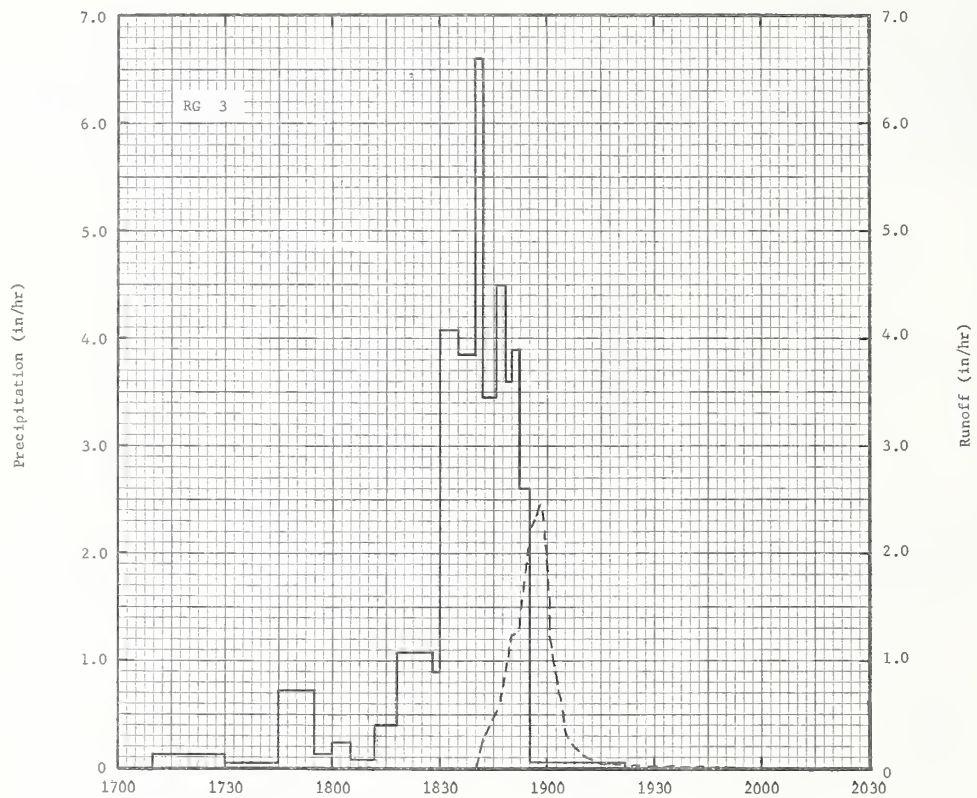
MONTHLY PRECIPITATION AND RUNOFF (inches)							OXFORD, MISSISSIPPI WATERSHED WC-2 AREA—1.45 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/	1.56	3.35	4.99	4.80	5.07	1.77	4.09	2.55	1.47	.00	4.73	3.21	37.59		
	Q	.20	1.33	2.36	.77	1.69	.00	.38	.06	.04	.00	.04	.56	7.43		
STA AV2/P		3.40	4.56	4.87	4.13	4.38	4.34	4.33	4.03	3.19	2.12	4.07	4.38	47.80		
	(58-63) Q	1.69	1.98	2.00	.57	1.05	.91	.54	.58	.48	.25	.64	1.34	12.03		
MEAN P 3/44 YR		5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-16	2.29	5-27	.61	5-26	.77	5-26	.96	5-26	.97	5-26	1.68	5-26	1.69	5-26	1.69
MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1963	6-10 1961	4.81	1-22 1962	1.29	2-23 1962	1.76	1-22 1962	2.37	1-22 1962	2.69	1-22 1962	2.69	1-22 1962	2.69	12-9 1961	3.66
NOTES: Watershed conditions: 100% of area cultivated in corn, high plant population, high crop yields, fair winter cover provided by crop residue. 1/ Precipitation data from rain gage 3. 2/ Precipitation records began Jan. 1958, runoff records began July 1958. 3/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 SELECTED RUNOFF EVENT							OXFORD, MISSISSIPPI WATERSHED WC-2									
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
			Event of July 20, 1963													
	RC 3		7-20	RC	3		7-20									
6-20	.44	.000		1710	.00	.00		1846	.000	.000						
6-21	.02	.000		1730	.12	.04		1847	.068	.001						
6-24	.37	.000		1745	.04	.05		1849	.486	.010						
6-27	.06	.000		1755	.72	.17		1851	1.176	.037						
6-28	.07	.000		1800	.12	.18		1852	1.477	.059						
6-30	.16	.000		1805	.24	.20		1853	1.758	.086						
7-3	.10	.000		1812	.09	.21		1855	1.758	.144						
7-7	.34	.000		1818	.40	.25		1857	1.430	.198						
7-8	.05	.000		1828	1.08	.43		1902	.636	.278						
7-13	.98	.000		1830	.90	.46		1906	.349	.311						
7-15	.02	.000		1835	4.08	.80		1910	.205	.330						
7-17	.02	.000		1840	3.84	1.12		1918	.089	.349						
				1842	6.60	1.34		1930	.055	.364						
				1846	3.45	1.57		1956	.014	.376						
				1848	4.50	1.72		2108	.000	.382						
Watershed conditions: 100% of area in corn, 10-12 ft. high, approximately 10,000 plants per acre, last tillage operation 6-3-63. Cultivated on contour with 0.2 to 0.4% row slopes.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.462. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.16-4.																



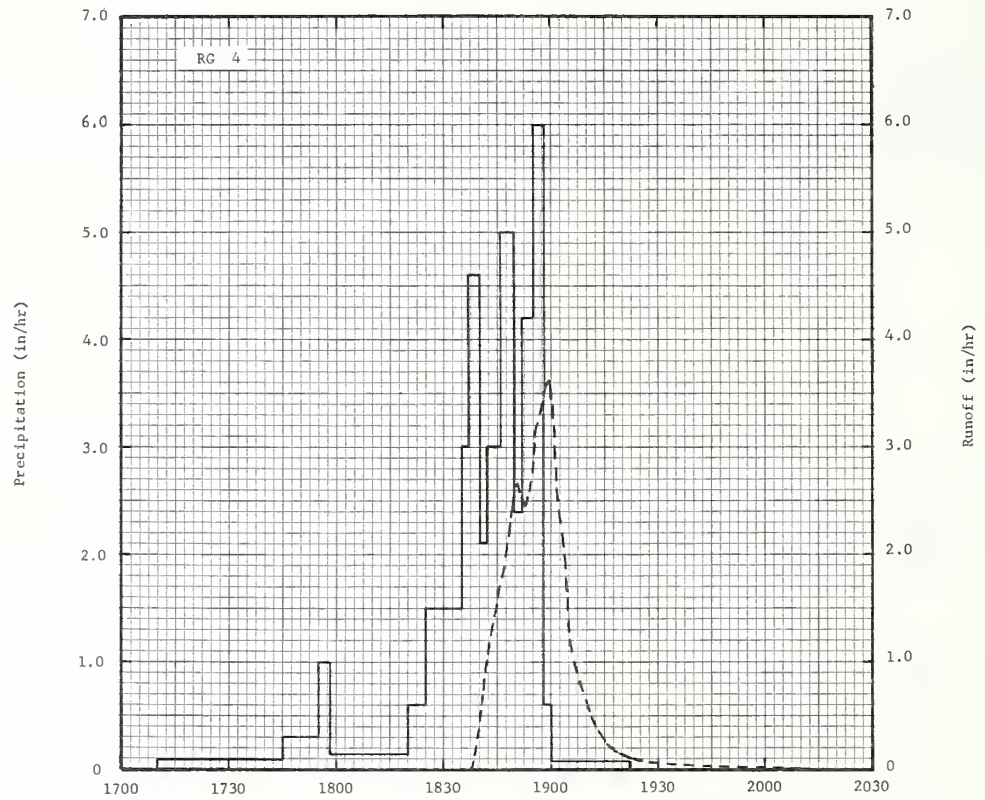
OXFORD, MISSISSIPPI WATERSHED WC-2

MONTHLY PRECIPITATION AND RUNOFF (inches)							OXFORD, MISSISSIPPI WATERSHED WC-3 AREA—1.61 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/	1.56	3.35	4.99	4.80	5.07	1.77	4.09	2.55	1.47	.00	4.73	3.21	37.59		
	Q	.14	.42	1.48	.76	1.53	.00	.52	.35	.20	.00	.26	.57	6.23		
STA AV 2/P (58-63)	P	3.40	4.56	4.87	4.13	4.38	4.34	4.33	4.03	3.19	2.12	4.07	4.38	47.80		
	Q	1.41	1.98	2.10	.60	1.08	1.27	.87	1.14	.65	.46	1.00	1.52	14.08		
MEAN P 3/ 44 YR	P	5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-29	5.24	5-27	.64	5-27	.70	5-26	.82	5-26	.82	5-26	1.52	5-26	1.53	5-26	1.53
MAXIMUMS FOR PERIOD OF RECORD																
19 58 TO 19 63	6-10 1961	5.96	6-10 1961	1.82	6-10 1961	1.85	1-22 1962	2.26	1-22 1962	2.59	1-22 1962	2.59	1-22 1962	2.59	12-9 1961	4.31
NOTES: Watershed conditions: 100% of area cultivated in corn, low plant population, low crop yields, poor winter cover provided by crop residue. 1/ Precipitation data from rain gage 3. 2/ Precipitation records began Jan. 1958, runoff records began July 1958. 3/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 SELECTED RUNOFF EVENT							OXFORD, MISSISSIPPI WATERSHED WC-3									
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 3		7-20	RG	3		7-20									
6-20	.44	.000		1710	.00	.00		1840	.000	.000						
6-21	.02	.000		1730	.12	.04		1842	.290	.004						
6-24	.37	.000		1745	.04	.05		1847	.634	.044						
6-27	.06	.000		1755	.72	.17		1850	1.238	.091						
6-28	.07	.000		1800	.12	.18		1852	1.287	.133						
6-30	.16	.000		1805	.24	.20		1855	2.230	.218						
7-3	.10	.000		1812	.09	.21		1857	2.347	.294						
7-7	.34	.000		1818	.40	.25		1858	2.470	.334						
7-8	.05	.000		1828	1.08	.43		1859	2.174	.373						
7-13	.98	.000		1830	.90	.46		1900	1.737	.406						
7-15	.02	.000		1835	4.08	.80		1901	1.287	.431						
7-17	.02	.000		1840	3.84	1.12		1904	.573	.473						
				1842	6.60	1.34		1906	.290	.488						
				1846	3.45	1.57		1911	.099	.504						
				1848	4.50	1.72		1917	.031	.510						
				1850	3.60	1.84		1925	.012	.513						
				1852	3.90	1.97		2010	.000	.516						
				1855	2.60	2.10										
				1922	.04	2.12										
Watershed conditions: 100% of area in corn, 6 to 8 ft. high, approximately 5000 plants per acre, last tillage operation 6-3-63. Row direction ranged from approximate contour to up and down hill.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.623. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.16-4.																

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station



MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED WP-4 AREA—3.01 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P ₁ / Q	1.54 .08	3.34 .52	5.01 1.79	4.82 1.28	5.16 1.95	1.70 .00	4.03 1.13	2.23 .26	1.43 .06	.00 .00	4.78 .73	3.19 2/ .81	37.23 2/ 8.61			
STA AV ₂ /P (58-63) Q	3.42 1.56	4.53 2.13	4.82 2.27	4.02 .95	4.34 1.38	4.23 1.63	4.24 1.01	3.82 .82	3.12 .47	2.05 .50	4.04 .96	4.29 1.24	46.92 14.92			
MEAN P 3/ 44 YR	5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-29	4.18	7-20	1.10	7-20	1.11	5-26	1.26	5-26	1.27	5-26	1.91	5-26	1.93	5-26	1.93
MAXIMUMS FOR PERIOD OF RECORD																
19 58 to 19 63	6-10 1961	5.30	6-10 1961	1.97	6-10 1961	1.97	1-22 1962	2.45	1-22 1962	2.79	1-22 1962	2.79	1-22 1962	2.79	2-21 1962	3.93
NOTES: Watershed conditions: Permanent pasture, overgrazed, no fertilization. About 85% of area had reasonably good cover, 15% (steeper slopes) poor cover. 1/ Precipitation from rain gage 4. 2/ Precipitation records began Jan. 1958, runoff records began July 1958. Watershed discontinued Dec. 31, 1963. 3/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1963 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI WATERSHED WP-4										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 20, 1963																
	RG 4		7-20	RG	4		7-20									
6-20	.48	.000		1710	.00	.00		1838	.000	.000						
6-21	.03	.000		1745	.09	.05		1840	.366	.005						
6-24	.38	.000		1755	.30	.10		1842	.956	.027						
6-27	.06	.000		1758	1.00	.15		1844	1.417	.066						
6-28	.07	.000		1820	.14	.20		1847	1.865	.149						
6-30	.16	.000		1825	.60	.25		1849	2.474	.222						
7-3	.10	.000		1835	1.50	.50		1851	2.676	.308						
7-7	.41	.000		1837	3.00	.60		1853	2.435	.393						
7-8	.07	.000		1840	4.60	.83		1855	2.801	.480						
7-13	.97	.020		1842	2.10	.90		1856	3.143	.529						
7-15	.02	.000		1846	3.00	1.10		1858	3.493	.640						
7-17	.02	.000		1849	5.00	1.35		1859	3.624	.699						
				1852	2.40	1.47		1900	3.493	.759						
				1855	4.20	1.68		1901	3.097	.814						
				1858	6.00	1.98		1902	2.554	.861						
Watershed conditions: 100% of area in permanent pasture, common lespedeza and native grasses, clipped to a height of about 2 ins. on 7-17-63. About 90% of area had good plant cover, 10% poor cover.					1900	.60	2.00	1904	1.865	.933						
				1922	.08	2.03		1906	1.134	.982						
								1910	.613	1.040						
								1916	.218	1.078						
								1930	.043	1.104						
								1944	.010	1.111						
								2012	.000	1.112						
NOTES: TO CONVERT RUNOFF IN IN/HR TO GFS, MULTIPLY BY 3.035. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.16-4.																



July 20, 1963

OXFORD, MISSISSIPPI WATERSHED WP-4

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI AREA—3,200 ACRES (5.00 SQ. MILES)								WATERSHED W-17A ^{1/} 62.17
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	P ^{2/}	1.42	3.50	5.01	4.54	4.23	1.51	4.07	3.68	2.55	.00	4.65	3.66	38.82
	Q	.00	.00	.34	.24	.17	.00	.01	.42	.15	.00	.03	.08	1.44
STA AV ^{3/} P (58-63) Q	P	3.41	4.55	4.66	4.22	3.39	3.64	4.60	4.07	3.73	1.95	3.70	4.51	46.43
	Q	.85	1.30	.98	.52	.26	.09	.15	.18	.49	.09	.08	.46	5.45
MEAN P ^{4/} 44 YR		5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE	MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
		1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
		DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963		8-29	.16	8-29	.15	8-29	.28	8-29	.41	8-29	.42	8-29	.42	8-29	.57

MAXIMUMS FOR PERIOD OF RECORD ^{5/}

19 61 to	2-23	.42	2-23	.42	2-23	.84	2-23	2.20	2-23	3.18	2-23	3.33	2-23	3.34	2-23	4.15
19 63	1962		1962		1962		1962		1962		1962		1962		1962	

NOTES: Watershed conditions: About 16% of area in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 54% in pasture and idle land, good cover April to October with fair cover remainder of year; 28% in woods, good cover; 2% in bare gullies. 1/ About 11% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 2, 17, 22, and 28. 3/ Precipitation and runoff records began Jan. 1957, but monthly data for 1957 were excluded from the station averages because discharge values were estimated that year. 4/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss. 5/ Maximum discharges and volumes were not computed prior to 1961, poor records 1958-60.

1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI							WATERSHED W-17A 62.17
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.92	.00	.00	.00	.00	.00	.00	.00	.47	.00	
2	.00	.56	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00	
3	.00	.00	.00	.00	.00	.00	.00	.00	.43	.00	.00	.00	
4	.00	.00	.54	.00	.00	.00	.00	.00	1.95	.00	.52	.00	
5	.18	.00	.85	.15	.36	.00	.05	.00	.01	.00	.46	.00	
6	.00	.00	.00	1.13	.00	.00	.00	.00	.00	.00	.00	.00	
7	.00	.00	.00	.00	.00	.00	.40	.00	.00	.00	.00	.37	
8	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00	
9	.00	.00	.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	
10	.00	2.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.41	
11	.49	.18	1.70	.00	.00	.00	.00	.18	.00	.00	.00	.78	
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
13	.00	.00	.00	.00	.00	.00	1.56	.00	.00	.00	.00	.00	
14	.00	.00	.00	.00	.52	.00	.09	.00	.00	.00	.00	.00	
15	.00	.00	.31	.00	.00	.21	.01	.00	.00	.00	.00	.00	
16	.00	.00	.37	.00	.00	.59	.05	.00	.00	.00	.00	.00	
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
18	.00	.28	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	
19	.08	.10	.00	.10	.00	.00	.00	.05	.00	.00	.00	.00	
20	.00	.00	.00	.00	.00	.25	.63	.09	.00	.00	1.77	.00	
21	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	
22	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.89	1.105	
23	.18	.14	.00	.00	.02	.00	.04	.00	.00	.00	.00	.00	
24	.00	.00	.00	.13	.00	.44	.00	.00	.00	.00	.00	.00	
25	.00	.11	.14	.96	.11	.00	.00	.00	.00	.00	.00	.00	
26	.09	.00	.00	.00	2.43	.02	.58	.00	.00	.00	.00	.00	
27	.00	.00	.00	.29	.69	.00	.00	.84	.00	.00	.00	.00	
28	.00	.10	.00	1.08	.06	.00	.00	.00	.16	.00	.49	.00	
29	.21	-----	.00	.70	.00	.00	.21	2.44	.00	.00	.00	.00	
30	.14	-----	.00	.00	.00	.00	.12	.00	.00	.00	.00	.00	
31	.05	-----	.00	-----	.00	-----	.03	.00	-----	.00	-----	.00	
TOTAL	1.42	3.50	5.01	4.54	4.23	1.51	4.07	3.68	2.55	.00	4.65	3.66	
STA AV	3.41	4.55	4.66	4.22	3.39	3.64	4.60	4.07	3.73	1.95	3.70	4.51	

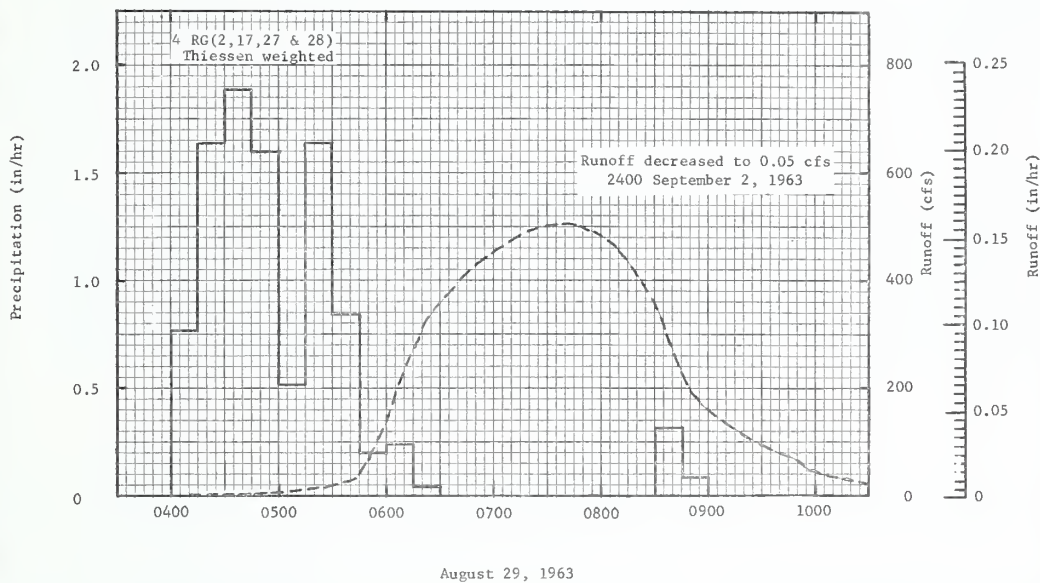
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIENSEN WEIGHTED FROM RAIN GAGES 2, 17, 22, AND 28. STATION AVERAGE IS FOR 6-YR RECORD PERIOD 1958-63.

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-17A 62-17	
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	.00	.08	.06	.00	.00	.00	.08	.01	.01	.01		
2	.00	.00	.00	.09	.06	.00	.00	.00	.06	.01	.01	.01		
3	.00	.00	.00	.14	.04	.00	.00	.00	.17	.01	.01	.01		
4	.00	.00	.00	.16	.04	.00	.00	.00	19.59	.01	.10	.02		
5	.00	.00	8.89	.16	.04	.00	.00	.00	.12	.01	.11	.02		
6	.00	.00	.00	.18	.05	.00	.00	.00	.12	.02	.01	.02		
7	.00	.00	.00	.17	.05	.00	.00	.00	.09	.02	.01	.02		
8	.00	.00	.00	.12	.03	.00	.00	.00	.06	.01	.12	.02		
9	.00	.00	.00	.15	.03	.00	.00	.00	.02	.00	.24	.02		
10	.00	.07	.00	.16	.04	.00	.00	.00	.00	.00	.24	.68		
11	.00	.00	34.93	.16	.04	.00	.00	.00	.00	.00	.22	9.15		
12	.00	.00	.00	.15	.04	.00	.00	.00	.00	.01	.19	.49		
13	.00	.00	.00	.12	.06	.00	.47	.00	.00	.02	.19	.06		
14	.00	.00	.00	.14	.06	.00	.10	.00	.00	.01	.24	.00		
15	.00	.00	.00	.18	.06	.00	.06	.00	.00	.01	.23	.00		
16	.00	.00	.00	.22	.04	.00	.00	.00	.00	.01	.21	.00		
17	.00	.00	.00	.26	.03	.00	.00	.00	.00	.02	.22	.00		
18	.00	.00	.00	.21	.04	.00	.00	.00	.00	.01	.21	.00		
19	.00	.00	.00	.12	.03	.00	.00	.00	.00	.01	.24	.00		
20	.00	.00	.18	.07	.00	.00	.07	.00	.00	.01	.48	.00		
21	.00	.00	.22	.03	.00	.00	.00	.00	.00	.12	.03	.00		
22	.00	.00	.09	.13	.00	.00	.00	.00	.00	.13	.37	.00		
23	.00	.00	.09	.22	.00	.00	.00	.00	.00	.01	.13	.00		
24	.00	.00	.09	.21	.00	.00	.00	.00	.00	.01	.02	.00		
25	.00	.00	.11	.11	.00	.00	.00	.00	.00	.01	.02	.00		
26	.00	.00	.10	.01	15.43	.00	.00	.00	.00	.02	.02	.00		
27	.00	.00	.11	.01	4.50	.00	.00	.00	.00	.01	.01	.00		
28	.00	.00	.14	.40	.10	.00	.00	.00	.00	.01	.01	.00		
29	.00	.00	.10	28.06	.06	.00	.00	56.35	.00	.02	.02	.00		
30	.00	.00	.08	.21	.04	.00	.00	.29	.00	.02	.02	.00		
31	.00	.00	.09	.09	.01	.00	.00	.09	.00	.01	.01	.00		
MEAN	.00	.00	1.46	1.08	.74	.00	.02	1.83	.68	.01	.13	.34		
INCHES	.00	.00	.34	.24	.17	.00	.01	.42	.15	.00	.03	.08		

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0074380. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1963 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-17A 62-17			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of August 29-30, 1963 1/										
8-29	2/.00	2/.0000	8-29	4 RG	AVG 3/		8-29	0410	.00	.0000
				0400	.00	.00		0430	.10	.0000
				0415	.76	.19		0434	1.00	.0000
				0430	1.64	.60		0456	3.52	.0002
				0445	1.88	1.07		0510	4.22	.0005
				0500	1.60	1.47		0544	31.00	.0036
				0515	.52	1.60		0604	175.00	.0142
				0530	1.64	2.01		0624	333.00	.0404
				0545	.84	2.22		0634	377.00	.0588
				0600	.20	2.27		0654	440.33	.1010
				0615	.24	2.33		0720	491.00	.1635
				0630	.04	2.34		0742	506.32	.2202
				0830	.00	2.34		0806	469.00	.2806
				0845	.32	2.42		0834	333.00	.3386
				0900	.08	2.44		0856	171.00	.3673
								0950	65.29	.4002
								0956	46.96	.4019
								1100	10.21	.4114
								1138	6.06	.4130
								1232	3.74	.4143
								1502	1.65	.4164
								1930	.77	.4181
								2400	.49	.4190
							8-30	2400	4/ .07	.4211

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0003099. MAP OF WATERSHED SHOWN WITH MAP OF WATERSHED W-17 IN HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.5-5. 1/ ISOHYETAL MAP ON P. 62.11-4. 2/FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RAIN GAGES 2, 17, 22, AND 28 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3. 4/ RUNOFF DECREASED TO 0.05 CFS AT 2400 ON 9-2-63.



OXFORD, MISSISSIPPI WATERSHED W-17A

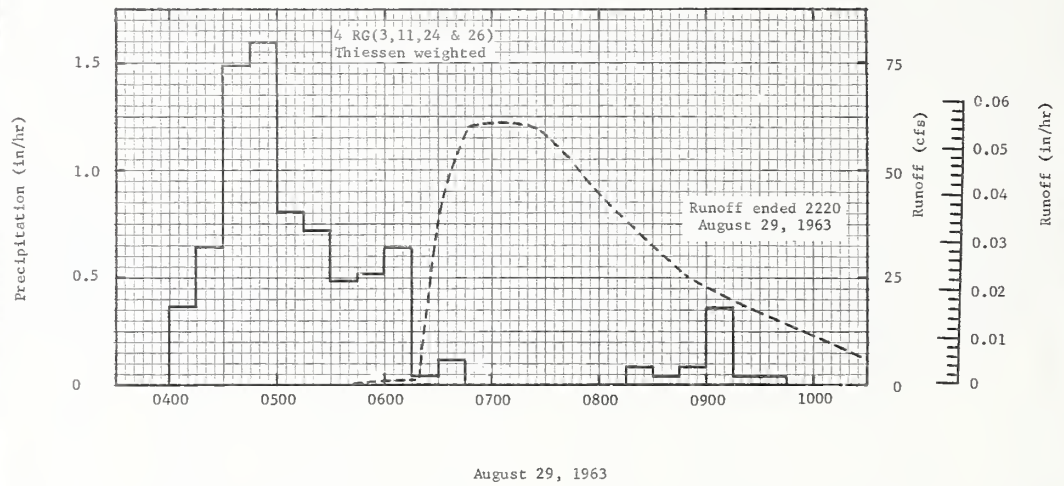
MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI				WATERSHED W-35A				62.18					
AREA—1,090 ACRES (1.70 SQ. MILES)																			
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL					
1963	P1/Q	1.30 .00	2.73 .33	3.98 1.45	4.16 .25	4.81 .84	2.64 .08	6.13 .54	3.55 .21	3.42 .65	.00 .00	5.39 .44	4.29 .95	42.40 5.74					
	STA AV2/P (58-63) Q	3.21 1.10	4.64 1.64	4.76 1.74	4.34 .96	3.94 .83	3.46 .21	4.65 .28	2.64 .12	4.39 .38	1.86 .07	4.09 .33	4.62 1.06	46.60 8.72					
MEAN P 3/ 44 YR		5.88	5.23	5.88	5.04	4.59	3.96	4.32	3.14	3.46	2.90	4.68	5.01	54.09					
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																			
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS				
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME			
1963	5-26	.21	5-26	.19	5-26	.33	5-26	.45	5-26	.47	5-26	.78	5-26	.83	3-5	.98			
MAXIMUMS FOR PERIOD OF RECORD 4/																			
1961 to 1962	2-23 1962	.59	2-23 1962	.58	2-23 1962	1.11	2-23 1962	1.76	2-23 1962	1.91	2-23 1962	2.01	2-20 1961	2.63	2-17 1961	3.24			
NOTES: Watershed conditions: About 25% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 73% in pasture and idle land, good cover April to October with fair cover remainder of year; 2% in bare gullies. 1/ Monthly precipitation Thiessen weighted from 4 rain gages. 2/ Precipitation and runoff records began Jan. 1957, but monthly data for 1957 were excluded from the station averages because discharge values were estimated that year. 3/ Mean P based on 44-yr (1920-63) U. S. Weather Bureau record period at Holly Springs 2N, Miss. 4/ Maximum discharges and volumes were not computed prior to 1961 - poor records 1957-60.																			
1963 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI								WATERSHED W-35A		62.18			
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC							
1	.00	.00	.88	.00	.00	.00	.00	.00	.00	.00	.46	.00							
2	.00	.39	.00	.00	.00	.00	.00	.66	.00	.00	.00	.00							
3	.00	.00	.00	.00	.00	.00	.17	.00	.22	.00	.00	.00							
4	.00	.00	.45	.00	.00	.00	.00	.00	2.97	.00	.25	.00							
5	.16	.00	.66	.17	.26	.00	.02	.00	.17	.00	.61	.00							
6	.00	.00	.00	1.07	.10	.00	.00	.00	.00	.00	.00	.00							
7	.00	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00	.40							
8	.00	.00	.00	.00	.02	.00	.12	.00	.00	.00	.00	.00							
9	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00							
10	.00	1.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.70							
11	.40	.15	1.23	.00	.00	.00	.00	.03	.00	.00	.00	1.15							
12	.00	.00	.00	.00	.00	.00	.00	.62	.00	.00	.00	.00							
13	.00	.00	.00	.00	.00	.00	1.40	.00	.00	.00	.00	.00							
14	.00	.00	.00	.00	.10	.00	.16	.00	.00	.00	.00	.00							
15	.00	.00	.46	.00	.00	.00	.00	.00	.00	.00	.00	.00							
16	.00	.00	.10	.00	.00	.89	.00	.00	.00	.00	.00	.00							
17	.00	.00	.00	.00	.00	.00	.35	.00	.00	.00	.00	.00							
18	.00	.33	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00							
19	.06	.09	.00	.20	.00	.21	.00	.00	.00	.00	.00	.00							
20	.00	.00	.00	.00	.00	.17	1.67	.08	.00	.00	2.54	.00							
21	.00	.00	.00	.00	.02	.77	.00	.00	.00	.00	.00	.00							
22	.00	.00	.00	.00	.06	.14	.00	.00	.00	.00	.90	1.04							
23	.06	.08	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							
24	.00	.00	.00	.06	.00	.15	.00	.00	.00	.00	.00	.00							
25	.00	.13	.00	.84	.11	.00	.00	.00	.00	.00	.00	.00							
26	.10	.00	.00	.00	2.88	.00	1.49	.00	.00	.00	.00	.00							
27	.00	.00	.00	.61	1.12	.00	.00	.15	.00	.00	.00	.00							
28	.00	.15	.00	.92	.14	.31	.00	.00	.06	.00	.53	.00							
29	.31	-----	.00	.29	.00	.00	.04	2.01	.00	.00	.00	.00							
30	.18	-----	.00	.00	.00	.00	.46	.00	.00	.00	.00	.00							
31	.03	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00							
TOTAL	1.30	2.73	3.98	4.16	4.81	2.64	6.13	3.55	3.42	.00	5.39	4.29							
STAAV	3.21	4.64	4.76	4.34	3.94	3.46	4.65	2.64	4.39	1.86	4.09	4.62							
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 3, 11, 24, AND 26. STATION AVERAGE IS FOR 6-YR RECORD PERIOD 1958-63.																			

1963 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-35A 62.18	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	8.62	.00	.00	.00	.00	.00	.00	.00	.00	.00		
2	.00	.00	1.80	.00	.00	.00	.00	.38	.00	.00	.00	.00		
3	.00	.06	1.55	.00	.00	.00	.00	.00	.00	.00	.00	.00		
4	.00	.00	1.49	.00	.00	.00	.00	.00	26.54	.00	.00	.00		
5	.00	.00	17.78	.00	.00	.00	.00	.00	3.22	.00	.00	.00		
6	.00	.00	2.06	.00	.00	.00	.00	.00	.00	.00	.00	.00		
7	.00	.00	.44	.00	.00	.00	.00	.00	.00	.00	.00	.00		
8	.00	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00	.00		
9	.00	.00	.40	.00	.00	.00	.00	.00	.00	.00	.00	.00		
10	.00	6.78	.32	.00	.00	.00	.00	.00	.00	.00	.00	6.46		
11	.00	4.80	20.42	.00	.00	.00	.00	.00	.00	.00	.00	31.40		
12	.00	1.45	3.04	.00	.00	.00	.00	2.74	.00	.00	.00	2.05		
13	.00	.56	1.27	.00	.00	.00	3.46	.00	.00	.00	.00	.26		
14	.00	.01	.75	.00	.00	.00	.34	.00	.00	.00	.00	.00		
15	.00	.00	1.28	.00	.00	.00	.00	.00	.00	.00	.00	.00		
16	.00	.00	2.70	.00	.00	.00	.00	.00	.00	.00	.00	.00		
17	.00	.00	1.65	.00	.00	.00	.36	.00	.00	.00	.00	.00		
18	.00	.00	.36	.00	.00	.00	.00	.00	.00	.00	.00	.00		
19	.00	1.00	.17	.00	.00	.00	.00	.00	.00	.00	.00	.00		
20	.00	.51	.08	.00	.00	.00	14.40	.00	.00	.00	16.08	.00		
21	.00	.00	.00	.00	.00	3.53	1.87	.00	.00	.00	.30	.00		
22	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00	2.92	.00		
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.78	.00		
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
26	.00	.00	.00	.00	21.48	.00	3.28	.00	.00	.00	.00	.99		
27	.00	.00	.00	.45	16.51	.00	.99	.00	.00	.00	.00	2.03		
28	.00	.00	.00	1.93	.35	.00	.00	.00	.00	.00	.00	.40		
29	.00	-----	.00	8.74	.00	.00	.00	6.71	.00	.00	.00	.06		
30	.00	-----	.00	.57	.00	.00	.24	.00	.00	.00	.00	.00		
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00		
MEAN	.00	.54	2.14	.39	1.24	.12	.80	.32	.99	.00	.67	1.41		
INCHES	.00	.33	1.45	.25	.84	.08	.54	.21	.65	.00	.44	.95		

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0218365. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1963			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-35A				62.18	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of August 29, 1963 1/																
8-29	2/.00	2/.0000	8-29	4 RG	AVG 3/		8-29	0534	.00	.0000						
				0400	.00	.00		0546	.34	.0000						
				0415	.36	.09		0556	1.60	.0001						
				0430	.64	.25		0620	1.85	.0007						
				0445	1.48	.62		0632	42.33	.0047						
				0500	1.60	1.02		0646	60.13	.0156						
				0515	.80	1.22		0702	61.05	.0303						
				0530	.72	1.40		0724	60.13	.0505						
				0545	.48	1.52		0800	44.85	.0792						
				0600	.52	1.65		0850	25.53	.1058						
				0615	.64	1.81		0944	14.00	.1220						
				0630	.04	1.82		1046	6.81	.1318						
				0645	.12	1.85		1140	4.34	.1364						
				0815	.00	1.85		1302	2.87	.1408						
				0830	.08	1.87		1504	.91	.1443						
				0845	.04	1.88		1826	.19	.1460						
				0900	.08	1.90		2220	.00	.1463						
				0915	.36	1.99										
				0930	.04	2.00										
				0945	.04	2.01										
Watershed conditions: 26% of area in mature cotton and corn, fair cover; 28% in pasture and 45% idle, fair to good cover; 1% in bare gullies.																

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0009099. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.12-5. 1/ ISOHYETAL MAP ON P. 62.11-4. 2/FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RAIN GAGES 3, 11, 24, AND 26 THIESSEN WEIGHTED. TOTAL STORM RAINFALL FOR THESE GAGES LISTED ON P. 62.11-3.



OXFORD, MISSISSIPPI WATERSHED W-35A

TOMBSTONE, ARIZONA WALNUT GULCH WATERSHED W-1 (63.001)

LOCATION: (Revision) Cochise County, Ariz.; 5.6 miles W. of Tombstone; Walnut Gulch, San Pedro River, Gila River, Colorado River Basin.

AREA: 36,900 ac. (57.7 sq. miles).

SLOPES: Not yet available.

SOILS, EROSION, AND LAND CAPABILITY: Detailed descriptions not yet available; see general notes in Hydrologic Data for Experimental Agricultural Watersheds in the United States 1956-59, USDA Misc. Pub. 945, 1963, p. 63.1-1.

GEOLOGY: Basin and Range Province; isolated mountain blocks separated by broad alluvium-filled basins. The watershed is bounded on the east by the lower Dragoon Mountains which are predominantly Triassic and Jurassic quartz monzonite. In the south central part, isolated volcanic hills form the perimeter of the study area. Andesite-rhyolite beds have been thrust over the underlying complex, resulting in a highly fractured region. In the southwestern portion of the watershed, major granitic intrusions have uplifted and exposed a thick sequence of limestone and shale beds. These fractured units form the Tombstone Hills and are cut by numerous faults and rhyolite dikes. Various intrusive rocks in this portion of the watershed have much local influence on drainage patterns. The majority of the watershed is covered by the Tombstone pediment, a deep Quaternary and Tertiary alluvial fill of disconnected lenses and layers of sands, gravel, and conglomerate up to depths of more than 1,200 feet. Some of the pediment conglomerates are resistant enough to form steep cliffs and affect drainage patterns. The northern boundary of the watershed is low alluvium hills. See geologic map on next page.

Stratigraphy and Hydrogeology of Walnut Gulch Watershed W-1

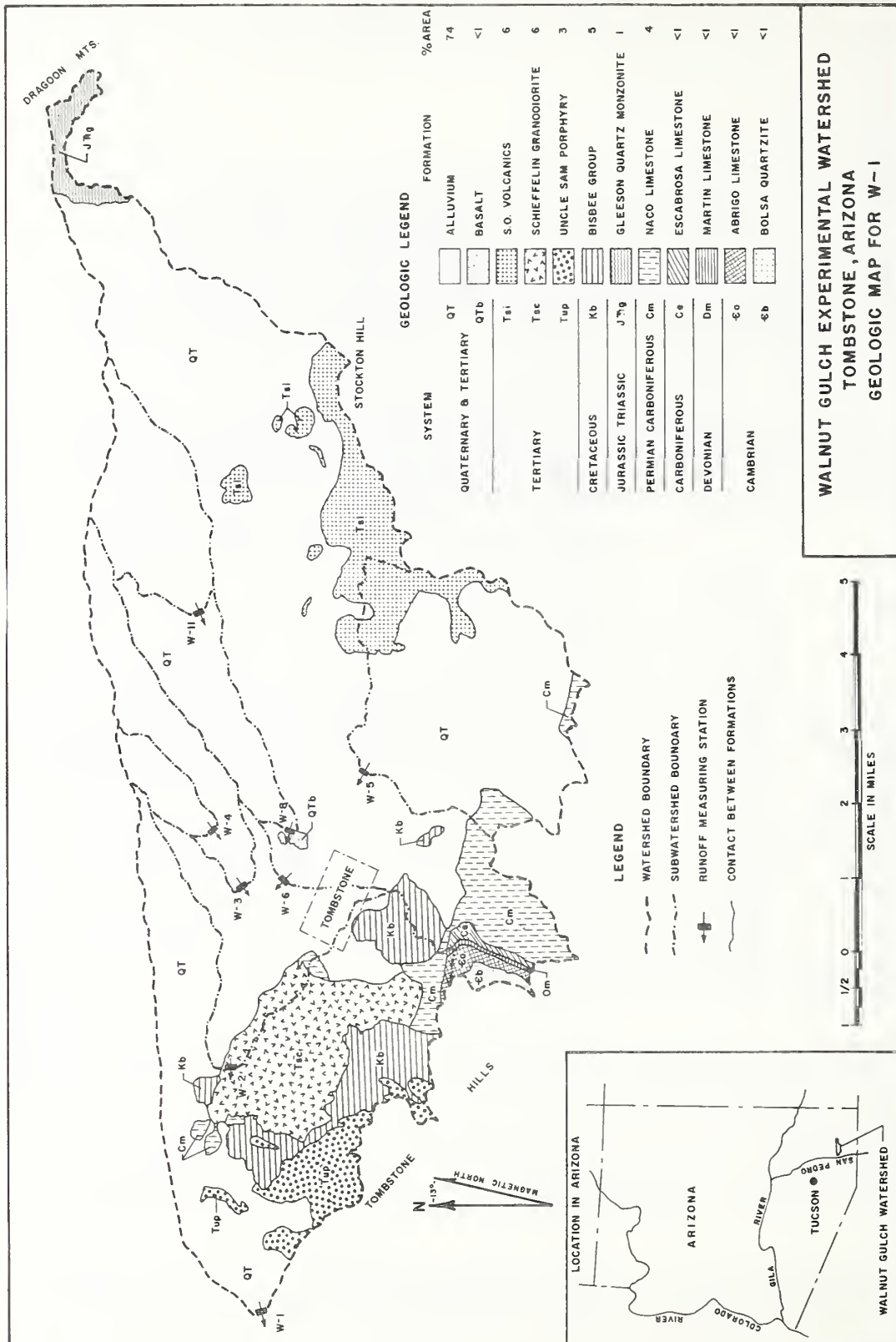
System	Formation and percent of area	Description
Quaternary and Tertiary	Alluvium 74% (Tombstone pediment)	Deep alluvial fill area, lensed and interbedded sand, gravel, conglomerate, caliche conglomerate, and some clay. A major water producer of the area.
	Basalt <1%	Intrusive olivine basalt plug, secondary calcite vein filling. Not important as a water producer.
Tertiary	S.O. volcanics 6%	Interbedded quartz latite tuffs, breccia, minor obsidian flows, hornblende andesite, some pyroclastic sandstones, mudstones, and conglomerates. Highly shattered. Not important as a water producer.
	Schiffelien granodiorite 6%	Intrusive fine-grained light grey biotite-hornblende granodiorite, easily altered. Contact metamorphism at limestone granite contacts. Highly fractured and jointed with secondary carbonate vein filling. Some small local water tables formed on granodiorite. Not a major water producer in this area.
	Intrusive rhyolite <1%	Intrusive fine to medium-grained cream to red-brown dikes and sills. Not included on geologic map because limited areal distribution. Not important as a water producer.
	Uncle Sam porphyry 3%	Quartz latite porphyry, small phenocrysts of feldspar, quartz, biotite, and hornblende, uneven texture, glassy matrix. Also includes volcanic breccia and flows. Not important as a water producer.
Cretaceous	Bisbee group 5%	Limestone, quartzite, sandstone, and mudstone. Area of low relief, some areas highly faulted and fractured. Some areas important as water producers.
Jurassic	Gleeson quartz monzonite 1%	Intrusive coarse-grained quartz monzonite. Has highly resistant alkali phase which forms high ridges and cliffs. Not important as a water producer.
Permian	Naco limestone (Naco group) 4%	Thick section of thin to thick-bedded light-tan to dark-blue limestone, dolomitic in some areas. Characteristic silica blebs in most upper layers. Cut by faults of major proportions in many areas. An important water producer in lower areas.
Carboniferous	Escabrosa limestone <1%	Light-grey coarse granular limestone. Dolomite and chert nodules common in most parts of the formation. Not important as a water producer.
Devonian	Martin limestone <1%	Light-grey to dark-blue limestone. Shale beds and chert common in the formation. Not important as a water producer.
Cambrian	Abrigo limestone <1%	Sandy impure limestone with some shale beds. Not important as a water producer.
	Bolsa quartzite <1%	Medium-grained light-pink quartzite. Surface weathers to reddish brown. Very erosion resistant formation. Not important as a water producer.

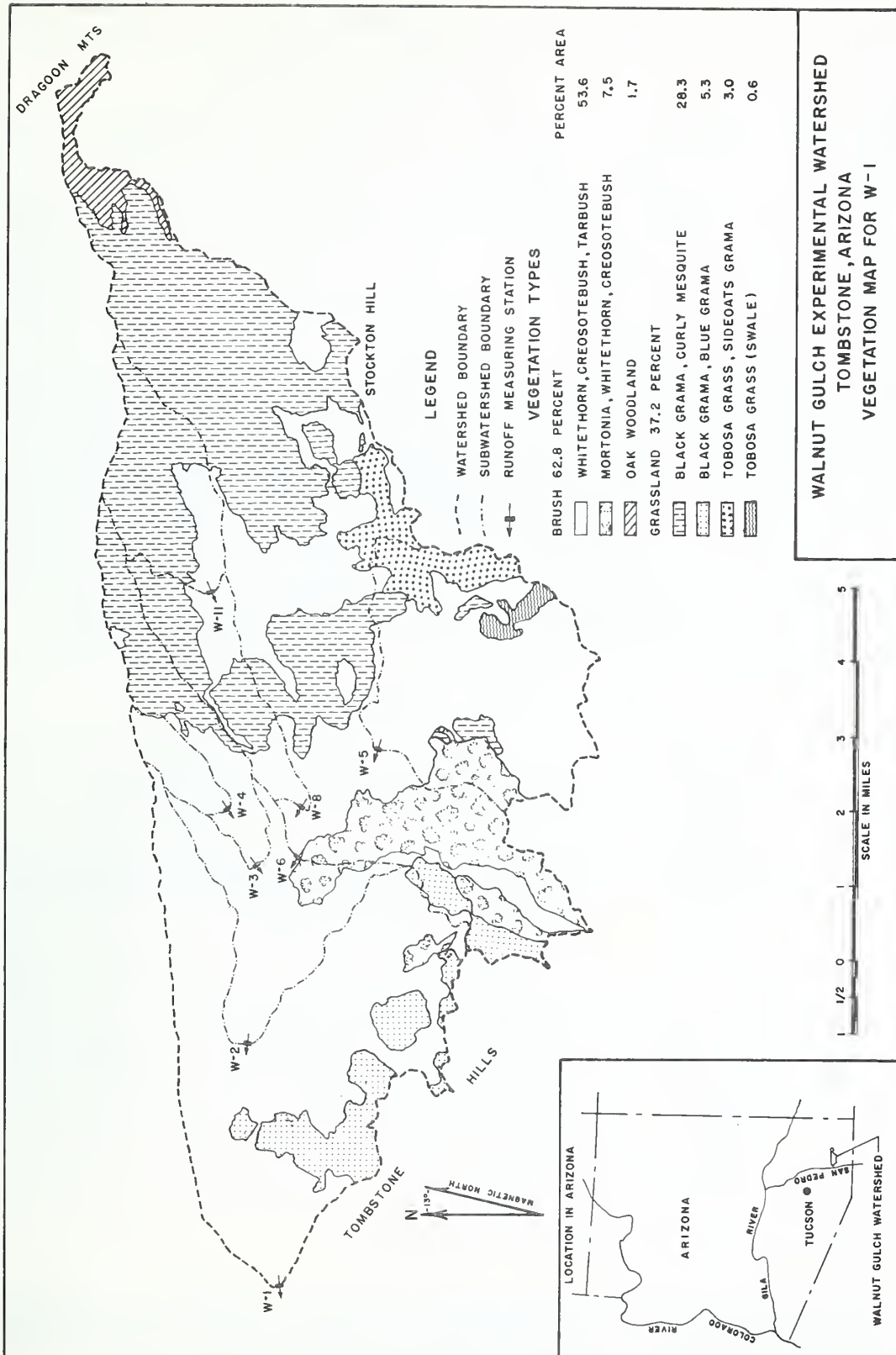
Source of data: General Geology of Central Cochise County, Arizona, by James Gilluly, U. S. Geological Survey, Professional Paper 281, 1956, and extended field studies by project staff. For additional details see geologic description for watersheds: W-3, 4, 5, and 6.

INSTRUMENTATION: (Revision) **Precipitation:** Measured with 81 recording gages, of which 77 gages operated with 24-hour charts and 4 gages with 6-hour charts. Six of these gages were installed between 6-21 and 7-15-63. **Runoff:** The cutoff wall installed in the natural channel in 1957 was replaced by a laboratory-rated flume of 22,500 cfs capacity in April 1964. Field ratings used to determine water yields and peak discharge amounts for the period of 1957-62, were unsatisfactory, therefore, the previously published values for this period should not be used until a re-evaluation of the records has been completed.

WATERSHED CONDITIONS: (Revision) Includes 2 subwatersheds, W-2 and W-6 on main waterway and 3 subwatersheds, W-3, W-4, and W-5, on tributaries. Vegetation cover: Oak woodland and desert shrubs (whitethorn, creosote bush, tarbush, and mormonia) occupy approximately 63 percent of the area, with a crown spread approximating 26 percent and a basal cover of grass of less than 1 percent. The remaining 37 percent supports a grass cover averaging 2.4 percent basal area and a shrub cover of 6 percent crown spread. Dominant grasses are black gramma, curly mesquite grass, sideoats gramma, blue grama, and tobosa grass. See vegetation map on page 63.1-3.

NOTES: NO MONTHLY OR ANNUAL P AND Q, ANNUAL MAXIMUM DISCHARGES AND ANNUAL MAXIMUM VOLUMES, OR SELECTED RUNOFF EVENTS ARE REPORTED FOR 1963 FOR W-1 OR W-2. (SEE EXPLANATION UNDER REVISED INSTRUMENTATION ABOVE). FOR TOPOGRAPHIC MAP OF WATERSHEDS, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1960-61, USDA MISC. PUB. 994, P. 63.1-2. FOR GEOLOGIC AND VEGETATION MAPS, SEE NEXT TWO PAGES.





TOMBSTONE, ARIZONA WALNUT GULCH WATERSHED W-2 (63.002)

LOCATION: (Revision) Cochise County, Ariz.; 2 3/4 miles NW of Tombstone; Walnut Gulch, San Pedro River, Gila River, Colorado River Basin.

AREA: 43.9 sq. mi. (28,100 ac.) **SHAPE:** Butterfly, approximately 13 miles long by 6 miles wide.

SLOPES: Not available.

SOILS, EROSION, AND LAND CAPABILITY: Detailed descriptions not yet available; see general notes in Hydrologic Data for Experimental Agricultural Watersheds in the United States 1956-59, USDA Misc. Pub. 945, 1963, p. 63.1-1.

GEOLOGY: The W-2 subwatershed occupies 76 percent of the eastern part of W-1 and is in the Basin and Range Province, isolated mountain blocks, separated by broad alluvium-filled basins. The subwatershed is 85 percent Quaternary and Tertiary alluvium of the Tombstone pediment. The alluvium is made up of permeable lensed and interbedded sand, gravel, conglomerate, caliche conglomerate, and some clay. Two series of conglomerates are recognized beneath the recent alluvium of the Tombstone pediment: A younger conglomerate whose bedding is nearly conformable to the pediment surface and probably considerably older than that surface; and an older Tertiary conglomerate lying unconformably beneath that. The younger conglomerate is known to persist to depth of 700 feet in places, and the older conglomerate to depths exceeding 1,200 feet. A few outcrops of the older conglomerate occur in recent stream channels near the city of Tombstone. Topographic expression of the alluvium is that of low undulating hills dissected by present stream channels. Caliche conglomerates of this unit are fairly resistant to erosion and form steep cliffs of low relief in some of the present stream channels. The alluvium reaches unknown depths on the east and lenses out at a probable fault contact as it abuts the Schieffelin granodiorite on the southwest. A considerable portion of the alluvium in the lower reaches of the watershed is underlain at shallow depth by the relatively impermeable Schieffelin granodiorite causing groundwater to accumulate and at times return to the surface as streamflow. The Schieffelin granodiorite borders the subwatershed on the southwest where it occupies an area of about 1 percent. It is Tertiary in age and is the major intrusive igneous rock in Walnut Gulch. The granodiorite forms the eastern foothills of the Tombstone Hills and has been reduced by physical and chemical weathering to remnant hills that are rapidly being converted to alluvium and residual soils. A small patch of Permian Naco limestone is found as a protective cap over the Schieffelin granodiorite and forms the highest hill in this area. Further south, uplifted and much faulted sedimentary beds occupy about 7 percent of the watershed. These beds range from Cambrian Abrigo limestone and Bolsa quartzite through Devonian Martin limestone and Carboniferous-Permian Escabrosa and Naco limestones overlain in places by the Cretaceous Bisbee formation. A small patch of pre-Cambrian granite is also found here. These rocks form the relatively high relief lower Tombstone Hills. This area has been much affected by east-west trending high angle faults and intrusive rhyolite dikes and deep granitic intrusions. Surface and subsurface irregularities, caused by faulting and intrusive bodies, noticeably affect the drainage of this area. An intrusive olivine basalt plug of small areal extent and Quaternary or late Tertiary age occurs just below Flume W-8. The plug is jointed and fractured making a highly permeable formation. Eight percent of the watershed in the southeast portion is highly faulted and fractured Tertiary intrusive and extrusive igneous rocks, mostly volcanics. Extensive folded tuff beds are found underlying andesite-rhyolite flow material. Topographic expression is that of low rolling hills interrupted in places by dike-like ridges. In the upper and eastern tip of the watershed, intrusive igneous rocks form high cliffs of the lower Dragoon Mountains. These rocks consist of Triassic or Jurassic Quartz monzonite and lesser amounts of pre-Cambrian granite. The quartz monzonite is erosion resistant and forms the highest peaks of the watershed at over 6000 feet while the less resistant granite makes up the lower foothills. These rocks make up about 1 percent of the watershed. Regional watertable depth near the west center of the watershed is about 425 feet. See Geologic map, P. 63.1-2, this volume.

Stratigraphy and Hydrogeology of Walnut Gulch Subwatershed W-2

System	Formation	Description
Quaternary & Tertiary	Recent Alluvium ≈ 80%	Gravel, sand, and clay. A major water producer of the area.
	Younger conglomerate ≈ 3%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.
	Older conglomerate ≈ 1%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.
	Basalt < 1%	Intrusive olivine basalt plug, secondary calcite vein filling. 1/
Tertiary	S. O. volcanics 9%	Interbedded quartz latite tuffs, andesite-rhyolite flows, pyroclastic sandstones, mudstones, and conglomerates. 1/
	Schieffelin granodiorite < 1%	Intrusive fine-grained light grey biotite-hornblende granodiorite. 1/
Cretaceous	Bisbee group 1%	Limestone, quartzite, sandstone, and mudstone. Some areas important as water producer.
Jurassic Triassic	Gleeson quartz monzonite 1%	Intrusive coarse-grained quartz monzonite. 1/
Permian Carboniferous	Naco limestone 4%	Light-tan to dark-blue limestone. Silica blebs in upper layers. An important water producer in lower areas.
Carboniferous	Escabrosa limestone < 1%	Light-grey coarse granular limestone, dolomite and chert nodules common. 1/
Devonian	Martin limestone < 1%	Light-grey to dark-blue limestone, shale beds and chert common. 1/
Cambrian	Abrigo limestone < 1%	Sandy impure limestone with some shale beds. 1/
	Bolsa quartzite < 1%	Medium-grained light-pink quartzite, weathers to reddish brown. 1/

1/ Not important as water producers.

Source of data: General Geology of Central Cochise County, Arizona, by James Gilluly, U. S. Geological Survey, Professional Paper 281, 1956, and extended field studies by project staff.

INSTRUMENTATION: (Revision) **Precipitation:** Measured with 56 recording gages of which 54 operated with 24-hour charts and 2 with 6-hour charts. Six of these gages were installed between 6-21 and 7-15-63. **Runoff:** Previously reported runoff data should be disregarded.

WATERSHED CONDITIONS: (Revision) Includes subwatersheds W-3, W-4, W-5 and W-6. Vegetation cover: Oak woodland and desert shrubs (whitethorn, creosote bush, tarbush, mortonia), with a crown spread of 25 percent cover, occupy 55 percent of the area. The remaining 45 percent supports grass (black grama, curly mesquite grass, tobosa grass, blue grama and sideots grama), with a basal area of 2.5 percent cover, and a shrub cover of approximately 6 percent crown spread. See vegetative map, p. 63.1-3, this publication.

TOMBSTONE, ARIZONA WALNUT GULCH WATERSHED W-3 (63.003)

LOCATION: Cochise County; 1.3 miles north of Tombstone; Walnut Gulch, San Pedro River, Gila River, Colorado River Basin.

AREA: 3.47 sq. mi. (2220 ac.) SHAPE: Long and narrow, approximately 5 miles long by 1 mile wide.

SLOPES: Not available.

SOILS: Tombstone 55%, Earp 45% (see W-1 and 2 for descriptions).

GEOLOGY: The W-3 area represents the broad alluvium-filled basins between the isolated mountain blocks of the Basin and Range Province. The northern edge forms the middle fifth of the north boundary of W-1 and covers 6 percent of its area. Quaternary and Tertiary alluvium of the Tombstone pediment occupies 100 percent of this subwatershed, which includes W-4. The alluvium is made up of permeably lensed and interbedded sand, gravel, conglomerate, caliche conglomerate, and some clay. Two series of conglomerate are recognized beneath the Recent alluvium of the Tombstone formation: A younger conglomerate whose bedding is nearly conformable to the pediment surface and probably considerably older than that surface; and an older Tertiary conglomerate lying unconformably beneath that. These conglomerates are known to persist to depths exceeding 1200 feet. Topographic expression of the alluvium is that of low undulating hills dissected by present stream channels. Caliche conglomerates of the above units are fairly resistant to erosion and form steep cliffs of low relief in some of the present stream channels. See geologic map on page 63.1-2, this publication.

Stratigraphy and Hydrogeology of Walnut Gulch Subwatershed W-3

System	Formation and percent of area	Description
Quaternary & Tertiary	Recent alluvium ≈ 96%	Gravel, sand, and clay.
	Younger conglomerate ≈ 3%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.
	Older conglomerate ≈ 1%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.

Source of Data: General Geology of Cochise County, Arizona by James Gilluly, U. S. Geological Survey, Professional Paper 281, 1956, and extended field studies by project staff.

INSTRUMENTATION: (Revision) Precipitation: Measured by 7 recording gages with 24-hour charts. Runoff: Runoff data for Watershed W-3 have been re-evaluated and no hydrologic data are being submitted for publication until they have been retabulated. Previously reported runoff data for this watershed should be disregarded.

WATERSHED CONDITIONS: (Revision) Includes subwatershed W-4. Vegetation cover: Desert shrubs (whitethorn, creosote bush, and tarbush) with a crown spread approximating 30 percent and grasses with basal area of approximately 0.8 percent cover occupy 55 percent of the area. Grasses (black grama, curly mesquite grass, tobosa grass) with a basal area of 2.6 percent cover and a shrub cover of 2 percent occupy the remaining 45 percent of the area.

NOTES: NO MONTHLY OR ANNUAL P AND Q, ANNUAL MAXIMUM DISCHARGES AND ANNUAL MAXIMUM VOLUMES, OR SELECTED RUNOFF EVENTS ARE REPORTED FOR 1963. (SEE EXPLANATION UNDER REVISED INSTRUMENTATION ABOVE). FOR WATERSHED TOPOGRAPHIC MAP SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB., 994, P. 63.1-2. FOR GEOLOGIC AND VEGETATION MAPS, SEE P. 63.1-2 and 63.1-3 OF THIS VOLUME.

TOMBSTONE, ARIZONA WALNUT GULCH WATERSHED W-4 (63.004)

LOCATION: Cochise County; 2 miles north of Tombstone; Walnut Gulch, San Pedro River, Gila River, Colorado River Basin.

AREA: 0.88 sq. mi. (560 ac.) SHAPE: Oval, 1 3/4 miles long by 1/2 miles wide.

SLOPES: Not available.

SOILS: Tombstone 100%, a gravelly loam, calcareous throughout, with a moderately permeable surface and subsoil.

GEOLOGY: The W-4 subwatershed occupies 25 percent of the northwest portion of subwatershed W-3 (and 1.5 percent of W-1) and is representative of the broad alluvium-filled basins between the isolated mountain blocks of the Basin and Range Province. Quaternary and Tertiary alluvium of the Tombstone pediment occurs on 100 percent of the drainage area. The alluvium is made up of permeable lensed and interbedded sand, gravel, conglomerate, caliche conglomerate, and some clay. Two series of conglomerates are recognized beneath the recent alluvium of the Tombstone Pediment: A younger conglomerate whose bedding is nearly conformable to the pediment surface and probably considerably older than that surface; and an older Tertiary conglomerate lying unconformably beneath that. These conglomerates are known to persist to depths exceeding 1,200 feet. Topographic expression of the alluvium is that of low undulating hills dissected by present stream channels. Caliche conglomerates of the above units are fairly resistant to erosion and form steep cliffs of low relief in some of the present stream channels. See geologic map, page 63.1-2, this publication.

Stratigraphy and Hydrogeology of Walnut Gulch Watershed W-4

System	Formation and percent of area	Description
Quaternary & Tertiary	Recent alluvium ≈ 96%	Gravel, sand, and clay.
	Younger conglomerate ≈ 3%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.
	Older conglomerate ≈ 1%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.

Source of data: General Geology of Cochise County, Arizona, by James Gilluly, U. S. Geological Survey, Professional Paper 281, and extended field studies by project staff.

INSTRUMENTATION: Precipitation: Measured by 3 recording gages with 24-hour charts. Runoff: Runoff data for Watershed W-4 have been re-evaluated and no hydrologic data are being submitted for publication until they have been re-tabulated. Previously reported runoff data for this watershed should be disregarded.

WATERSHED CONDITIONS: (Revision) Vegetative cover: Entire area dominated by desert shrubs (whitethorn, creosote bush, and tarbush) with a crown spread approximating 38 percent and an understory of grasses with approximately 0.6 percent basal cover.

NOTES: NO MONTHLY OR ANNUAL P AND Q, ANNUAL MAXIMUM DISCHARGES AND ANNUAL MAXIMUM VOLUMES, OR SELECTED RUNOFF EVENTS ARE REPORTED FOR 1963. (SEE EXPLANATION UNDER REVISED INSTRUMENTATION ABOVE). FOR WATERSHED TOPOGRAPHIC MAP SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB., 994, P. 63.1-2. FOR GEOLOGIC AND VEGETATION MAPS, SEE P. 63.1-2 AND 63.1-3 OF THIS VOLUME.

TOMBSTONE, ARIZONA WALNUT GULCH WATERSHED W-5 (63.005)

LOCATION: Cochise County; 1 3/4 miles east of Tombstone; Walnut Gulch, San Pedro River, Gila River, Colorado River Basin.

AREA: 8.61 sq. mi. (5510 ac.) **SHAPE:** Roughly circular, diameter of 3 1/2 miles.

SLOPES: Not available.

SOILS: Boothill, a stony clay loam developed on andesite extrusions; calcareous throughout the profile; moderately permeable -- 15%. Cave, a gravelly sandy loam developed on outwash material from andesite extrusions; calcareous throughout the profile; moderately permeable -- 15%. Tombstone (see description under W-2) 43%. Tortugas (see W-2) 8%. The remaining 19% is made up of small bodies of five other moderately permeable soils.

GEOLOGY: This subwatershed is representative of the Basin and Range Province and is located in south part of W-1, occupying 14.9 percent of its area. Quaternary and Tertiary alluvium of the Tombstone pediment occurs on 82 percent of the subarea (W-5). The alluvium is made up of permeable lensed and interbedded sand, gravel, conglomerate, caliche conglomerate, and some clay. Two series of conglomerate are recognized beneath the recent alluvium of the Tombstone pediment: A younger conglomerate whose bedding is nearly conformable to the pediment surface and probably considerably older than that surface, and an older Tertiary conglomerate lying unconformably beneath that. These conglomerates are known to persist to depths exceeding 1,200 feet. Topographic expression of the alluvium is that of low undulating hills dissected by present stream channels. Caliche conglomerates of this unit are fairly resistant to erosion and form steep cliffs of low relief in some of the present stream channels. In the east, 13 percent of the watershed is made up of highly faulted and fractured Tertiary intrusive and extrusive igneous rocks, mostly volcanics. Extensive folded tuff beds are found underlying andesite-rhyolite flow material. Topographic expression is that of low rolling hills interrupted in places by dike-like ridges. In the south and southwest, thick sections of permian and carboniferous age limestones form low hills and cover 5 percent of the watershed. Numerous intrusive rhyolite dikes and sills invade the limestones and affect surface and subsurface drainage. See geologic map on page 63.1-2 of this volume.

Stratigraphy and Hydrogeology of Walnut Gulch Subwatershed W-5

System	Formation and percent of area	Description
Quaternary & Tertiary	Recent alluvium 78%	Gravel, sand, and clay. This, and underlying conglomerates, are important water producers.
	Younger conglomerate ≈ 3%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.
	Older conglomerate ≈ 1%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.
Tertiary	S. O. volcanics 15%	Interbedded quartz latite tuffs, andesite-rhyolite flow, pyroclastic sandstone mudstones, and conglomerates. Not important as a water producer.
Permian Carboniferous	Naco limestone 4%	Light-tan to dark-blue limestone. Silica blebs in upper layers. Important water producer.

Source of data: General Geology of Central Cochise County, Arizona, by James Gilluly, U. S. Geological Survey, Professional Paper 281, 1956, and extended field studies by project staff.

INSTRUMENTATION: (Revision) **Precipitation:** Measured by 11 recording gages, 10 with 24-hour charts and 1 with a 6-hour chart. **Runoff:** Runoff data for W-5 have been re-evaluated and no hydrologic data are being submitted for publication until they have been retabulated. Previously reported runoff data for this watershed should be disregarded.

WATERSHED CONDITIONS: (Revision) Vegetation cover: Desert shrubs (Whitethorn, creosote bush, tarbush) occupy 78 percent of the area with a crown spread of approximately 30 percent and an understory of grasses of less than 1 percent basal area. The remaining 22 percent of the area supports a grass cover (black grama, tobosa grass, blue grama, side-oats grama, and curly mesquite grass) of approximately 2 percent basal area.

NOTES: NO MONTHLY OR ANNUAL P AND Q, ANNUAL MAXIMUM DISCHARGES AND ANNUAL MAXIMUM VOLUMES, OR SELECTED RUNOFF EVENTS ARE REPORTED FOR 1963. (SEE EXPLANATION UNDER REVISED INSTRUMENTATION ABOVE). FOR WATERSHED TOPOGRAPHIC MAP SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB., 994, P. 63.1-2. FOR GEOLOGIC AND VEGETATION MAPS, SEE P. 63.1-2 AND 63.1-3 OF THIS VOLUME.

TOMBSTONE, ARIZONA WALNUT GULCH WATERSHED W-6 (63.006)

LOCATIONS: Cochise County, Arizona; 3/4 mile north of Tombstone; Walnut Gulch, San Pedro River, Gila River, Colorado River Basin.

AREA: 23,500 acres (36.7 Sq. miles)

SLOPES:	Slope - Percent	0-3	3-10	10-20	20-35
	Percent of area	3	59	29	9

SOILS: Not yet available.

EROSION:	Erosion Class	1	2
	Percent of area	98	2

LAND CAPABILITY:	Class	VI
	Percent of area	100

GEOLOGY: This subwatershed, typical of the Basin and Range Province, occupies 63.7 percent of the eastern and south central parts of Watershed W-1. Quaternary and Tertiary alluvium of the Tombstone pediment covers 81 percent of the subarea. The alluvium is made up of permeable lensed and interbedded sand, gravel, conglomerate, caliche conglomerate, and some clay. Two series of conglomerate are recognized beneath the Recent alluvium of the Tombstone Pediment: A younger conglomerate whose bedding is nearly conformable to the pediment surface and probably considerably older than that surface; and an older Tertiary conglomerate lying unconformably beneath that. These conglomerates are known to persist to depths exceeding 1,200 feet. Topographic expression of the alluvium is that of low undulating hills dissected by present stream channels. Caliche conglomerates of this unit are fairly resistant to erosion and form steep cliffs of low relief in some of the present stream channels. In the upper and eastern tip of the watershed, intrusive igneous rocks form high cliffs of the lower Dragoon Mountains. These rocks consist of Triassic or Jurassic quartz monzonite and lesser amounts of Precambrian granite. The quartz monzonite is erosion resistant and forms the highest peaks of the watershed at over 6,000 feet elevation, while the less resistant granite makes up the lower foothills. These rocks make up about 2 percent of the subwatershed. In the southeast portion, 9 percent of the area is made up of highly faulted and fractured Tertiary intrusive and extrusive igneous rocks, mostly volcanics. Extensive folded tuff beds are found and underlying andesite-rhyolite flow material. Topographic expression is that of low rolling hills interrupted in places by dike-like ridges. In the southwest, uplifted and much faulted sedimentary beds occupy about 7 percent of the drainage area. These beds range from Cambrian Abrigo limestone and Bolsa quartzite through Devonian Martin limestone and Carboniferous-Permian Escabrosa and Naco limestones overlain in places by the Cretaceous Bisbee formation. These rocks from the relatively high relief on the lower Tombstone Hills. This area has been much affected by east-west trending high angle faults and rhyolite intrusive dikes and sills and deep granitic intrusions. Surface and subsurface irregularities caused by faulting and intrusive bodies noticeably affect the drainage of this area. An intrusive olivine basalt plug of small areal extent and Quaternary or Late Tertiary age occurs just below runoff flume W-8. The plug is jointed and fractured, making a highly permeable formation. See geologic map, page 63.1-2 of this volume.

Stratigraphy and Hydrogeology of Walnut Gulch Subwatershed W-6

System	Formation and percent of area	Description
Quaternary & Tertiary	Alluvium (Tombstone pediment) 80%	Deep alluvial fill area, lensed and interbedded sand, gravel, conglomerate, caliche conglomerate, and some clay. A major water producer of the area.
	Basalt < 1%	Intrusive olivine basalt plug, secondary calcite vein filling. 1/
	S. O. volcanics 11%	Interbedded quartz latite tuffs, andesite-rhyolite flows, pyroclastic sandstones, mudstones, and conglomerates. 1/
Tertiary	Intrusive rhyolite < 1%	Intrusive fine to medium-grained cream to red-brown dikes and sills. Not included on geologic map because limited areal distribution. Not important as a water producer.
Cretaceous	Bisbee group 1%	Limestone, quartzite, sandstone, and mudstone. Some areas produce water.
Jurassic	Gleeson quartz monzonite 2%	Intrusive coarse-grained quartz monzonite. 1/
Permian	Naco limestone 5%	Light-tan to dark-blue limestone. Silica blebs in upper layers. Important water producer in lower areas.
Carboniferous	Escabrosa limestone < 1%	Light-grey coarse granular limestone, dolomite and chert nodules common. 1/
Devonian	Martin limestone < 1%	Light-grey to dark-blue limestone, shale beds and chert common. 1/
Cambrian	Abrigo limestone < 1%	Sandy impure limestone with some shale beds. 1/
	Bolsa quartzite < 1%	Medium-grained light-pink quartzite, weathers to reddish brown. 1/

1/ Not important as water producers.

Source of data: General Geology of Central Cochise County, Arizona, by James Gilluly, U.S. Geological Survey, Professional Paper 281, 1956, and extended field studies by project staff.

SURFACE DRAINAGE: Good, length of principal waterway is 13.3 miles with 4 major tributaries; a natural watershed with surface flow to well defined water courses; includes gaged watersheds W-5, W-8, and W-11.

CHARACTER OF FLOW: Ephemeral

INSTRUMENTATION: **Precipitation:** Measured with 45 recording gages of which 43 operate with 24-hour charts and 2 with 6-hour charts. Four of these gages were installed between 6-21 and 7-15-63. **Runoff:** Critical depth flume (Pre-calibrated), AD-35 analog strip chart water level recorder.

WATERSHED CONDITIONS: Includes subwatersheds W-5, W-8 and W-11. Vegetation cover: Oak woodland and desert shrubs (Whitethorn, creosote bush, tarbush, mortonia) occupy approximately 45 percent of the area, with a crown spread of 25 percent cover. The remaining 55 percent of the area supports a grass cover (black grama, curly mesquite grass, tobosa grass, blue grama, and sideoats grama) with a basal area of 2.5 percent cover and a shrub cover of approximately 6 percent crown spread.

GENERALLY REPRESENTS: Desert grassland ranges in the Southeastern Arizona Basin and Range land resource area (D-41).

1963 MONTHLY PRECIPITATION AND RUNOFF (inches)						TOMBSTONE, ARIZONA WATERSHED W-6 AREA—23,500 ACRES (36.7 SQ. MILES)								63.006		
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1962 P 1/	1.32	.01	.55	.00	.00	.24	3.75	.35	1.65	.09	.57	.91	9.44			
Q	.00	.00	.00	.00	.00	.00	.12	.00	.04	.00	.00	.00	.16			
1963 P 2/	.18	.37	.03	.14	.00	.00	2.81	4.08	1.17	.30	1.50	.30	10.88			
Q	.00	.00	.00	.00	.00	.00	.02	.27	.01	.00	.00	.00	.30			
STA AVG P 3/	.75	.19	.44	.07	.00	.12	3.28	2.21	1.41	.19	1.04	.60	10.30			
62-63 D	.00	.00	.00	.00	.00	.00	.07	.14	.02	.00	.00	.00	.23			
MEAN P 4/																
67 YR.	.85	.79	.62	.29	.19	.51	3.62	3.50	1.52	.68	.65	.87	14.09			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1962	7-25	.0747	7-25	.0557	7-25	.0705	7-25	.07	7-25	.0745	7-25	.0746	7-24	.0753	7-24	.1164
1963	8-19	.0840	8-19	.0669	8-19	.0908	8-19	.1056	8-19	.1058	8-19	.1058	8-19	.1058	8-19	.1787
MAXIMUMS FOR PERIOD OF RECORD																
1962 TO 1963	8-19 1963	.0840	8-19 1963	.0669	8-19 1963	.0908	8-19 1963	.1056	8-19 1963	.1058	8-19 1963	.1058	8-19 1963	.1058	8-19 1963	.1787
Notes: Watershed conditions: Desert grassland range; drainage area includes watersheds W-5, W-8, and W-11. 1/ Monthly precipitation is the arithmetic average of 37 rain gages. 2/ Monthly precipitation is the arithmetic average of 43 rain gages. 3/ Precipitation and runoff records began in 1962. 4/ Mean P based on 67-yr (1897-1963) U. S. Weather Bureau record for Tombstone, Ariz.																
1962 SELECTED RUNOFF EVENTS						TOMBSTONE, ARIZONA WATERSHED W-6								63.006		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 25-26, 1962 5/																
7-18	RG-44 .36	.003	7-25	RG 2100	.00	.00	7-25	2220	.00000	.00000						
7-19	.03	.000		2106	3.00	.30		2221	.00021	.00000						
7-21	.05	.000		2114	3.07	.71		2222	.00090	.00001						
7-24	.00	.001		2119	2.88	.95		2223	.00352	.00005						
				2128	2.60	1.34		2224	.00568	.00013						
				2137	2.07	1.65		2225	.01196	.00028						
				2202	.38	1.81		2226	.01709	.00052						
				2303	.14	1.95		2227	.02227	.00085						
				2359	.09	2.03		2228	.03229	.00130						
7-4	RG-45 .48	.000	7-25	RG 2100	.00	.00		2229	.04458	.00194						
7-18	.49	.003		2111	.87	.16		2230	.05166	.00274						
7-19	.05	.000		2114	2.80	.30		2232	.05709	.00455						
7-21	.08	.000		2129	2.56	.94		2235	.06147	.00751						
7-24	.00	.001						2240	.06189	.01265						
				2139	1.26	1.15		2245	.06273	.01784						
				2151	1.30	1.41		2250	.06357	.02310						
				2216	.48	1.61		2255	.06483	.02845						
				2255	.11	1.68		2300	.07473	.03427						
				2315	.18	1.74		2305	.06652	.04016						
				2400	.07	1.79		2310	.05557	.04525						
			7-26	0013	.04	1.80		2315	.04458	.04942						
								2320	.03456	.05272						
								2325	.03170	.05548						
								2330	.02800	.05797						
								2340	.02206	.06214						
								2350	.01579	.06529						
								2400	.01120	.06754						
							7-26	0015	.00682	.06979						
								0030	.00501	.07127						
								0045	.00303	.07227						
								0100	.00200	.07290						
								0130	.00110	.07367						
								0300	.00015	.07449						
								0600	.00000	.07462						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 23,695. FOR TOPOGRAPHIC MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 63.1-2. 5/ FOR ISOHYETAL MAP OF EVENT SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, P. 63.2-3. FOR GEOLOGIC AND VEGETATION MAP SEE P. 63.1-2 AND 63.1-3 OF THIS VOLUME.																

1962 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA WATERSHED W-6 63.006							
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 4, 1962										
8-16	RG-32 .04	0.00	9-4	RG	32		9-4			
8-21	.09	.00		1450	.00	.00		1510	.00000	.00000
				1456	2.42	.24		1512	.00140	.00002
				1502	2.99	.54		1514	.00797	.00018
				1508	2.88	.83		1516	.01311	.00053
				1517	.69	.93		1518	.02976	.00124
				1529	.29	.99		1520	.03946	.00239
				1544	.05	1.00		1522	.04551	.00381
								1527	.04018	.00738
								1532	.03651	.01058
8-22	RG-39 .04	.00	9-4	RG	39			1537	.03205	.01344
				1415	.00	.00		1542	.03031	.01604
				1421	1.80	.18		1547	.02702	.01843
				1425	3.82	.43		1552	.01295	.02010
				1430	4.20	.78		1557	.01151	.02112
				1437	3.82	1.23		1602	.00977	.02201
				1446	1.91	1.52		1607	.00833	.02276
				1501	.38	1.61		1612	.00577	.02335
								1617	.00495	.02380
								1620	.00577	.02407
								1627	.00407	.02464
								1637	.00221	.02516
								1647	.00168	.02549
								1657	.00110	.02572
								1707	.00074	.02587
								1717	.00048	.02597
								1727	.00027	.02603
								1737	.00015	.02606
								1752	.00008	.02609
								1807	.00003	.02610
								1837	.00000	.02610
<p>Watershed conditions: Includes subwatersheds W-5, W-8, and W-11. Vegetation cover: Oak woodland and desert shrubs (whitethorn, creosote bush, tarbush, mertonia) occupy approximately 45 percent of the area, with a crown spread of 25 percent cover. The remaining 55 percent of the area supports a grass cover (black grama, curly mesquite grass, tobosa grass, blue grama, and sideoats grama) with a basal area of 2.5 percent cover and a shrub cover of approximately 6 percent crown spread.</p>										

NOTES: TO CONVERT RUNOFF IN/HR TO CFS, MULTIPLY BY 23,695. FOR ISOHYETAL MAP SEE P. 63.6-8

1963 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA				WATERSHED W-6				63.006
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of August 19, 1963											
	RG-52		8-19	RG	52		8-19				
7-19	.03	.0000		0900	.00	.00		0923	.00000	.000000E	
7-22	.35	.0000		0908	3.37	.45		0925	.00005	.000001E	
7-24	.11	.0000		0915	3.26	.83		0927	.00042	.000009E	
7-25	.17	.0000		0930	1.64	1.24		0929	.00077	.00003E	
7-26	.12	.0000		0938	1.05	1.38		0931	.00190	.00007E	
7-27	.04	.0000		1002	.22	1.47		0933	.00258	.00014E	
7-28	.03	.0000						0935	.00338	.00024E	
7-28	.12	.0026						0937	.00432	.00037E	
7-29	.41	.0014						0939	.00493	.00052E	
7-31	.30	.0142						0941	.00728	.00072E	
8-2	.18	.0002						0943	.00888	.00099E	
8-8	.03	.0000						0945	.00977	.00130E	
8-10	.35	.0335						0950	.00989	.00212E	
								0955	.01048	.00297E	
	RG-64		8-19	RG	64			0958	.01271	.00355E	
7-19	.03	.0000		0900	.00	.00		1000	.01507	.00401E	
7-20	.04	.0000		0908	2.02	.27		1002	.01806	.00456	
7-22	.30	.0000		0913	6.00	.77		1004	.02050	.00520	
7-26	.21	.0000		0915	4.50	.92		1006	.02577	.00597	
7-27	.05	.0000		0920	3.84	1.24		1008	.02955	.00689	
7-28	.07	.0000		0931	1.14	1.45		1010	.03512	.00797	
7-28	.37	.0026		0951	.21	1.52		1015	.04193	.01118	
7-29	.78	.0014						1020	.04842	.01495	
7-31	.67	.0142						1025	.05166	.01912	
8-2	.23	.0002						1030	.05936	.02375	
8-3	.03	.0000						1035	.06963	.02913	
8-8	.02	.0000						1040	.07612	.03520	
8-9	.20	.0000						1045	.08028	.04172	
8-12	.50	.0079						1051	.08399	.04993	
8-13	.05	.0000						1055	.08214	.05546	
8-15	.05	.0000						1057	.07890	.05814	
								1101	.08121	.06348	
								1103	.07982	.06616	
								1105	.06610	.06859	
								1110	.05633	.07369	
								1115	.04947	.07810	
								1120	.04096	.08188	
								1125	.03343	.08498	
								1130	.02602	.08746	
								1135	.02118	.08926	
								1140	.01633	.09082	
								1145	.01270	.09203	
								1150	.01031	.09299	
								1155	.00922	.09380	
								1210	.00884	.09606	
								1220	.00884	.09753	
								1230	.00749	.09899	
								1240	.00547	.09997	
								1300	.00449	.10163	
								1315	.00383	.10267	
								1330	.00331	.10358	
								1345	.00239	.10427	
								1400	.00166	.10477	
								1415	.00110	.10511	
								1430	.00075	.10534	
								1445	.00046	.10549	
								1500	.00030	.10559	
								1515	.00020	.10567	
								1530	.00011	.10571	
								1545	.00007	.10573	
								1600	.00004	.10575	
								1630	.00002	.10577	
								1700	.000006	.10578	
								2400	.000000	.10578	

Watershed conditions: Includes subwatersheds W-5, W-8, and W-11. Vegetation cover: Oak woodland and desert shrubs (whitethorn, creosote bush, tarbush, mortonia) occupy approximately 45 percent of the area, with a crown spread of 25 percent cover. The remaining 55 percent of the area supports a grass cover (black grama, curly mesquite grass, tobosa grass, blue grama, and sidecoats grama) with a basal area of 2.5 percent cover and a shrub cover of approximately 6 percent crown spread.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 23,695. FOR ISOHYETAL MAP OF EVENT SEE P. 63.6-9.

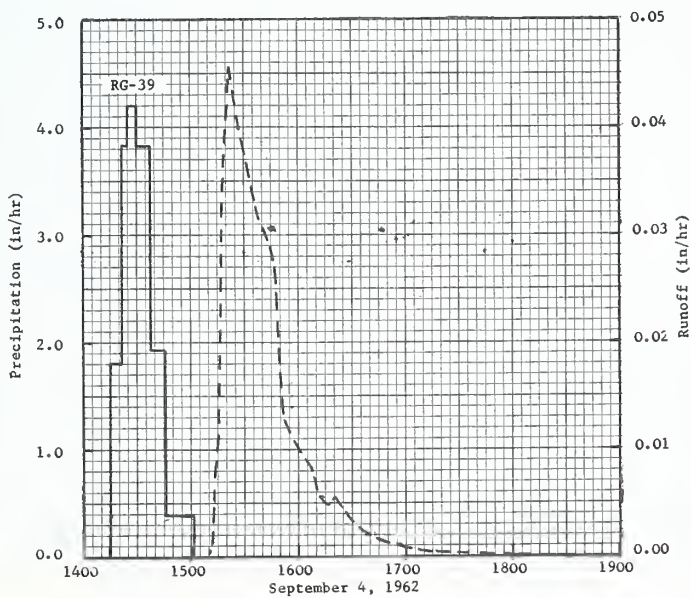
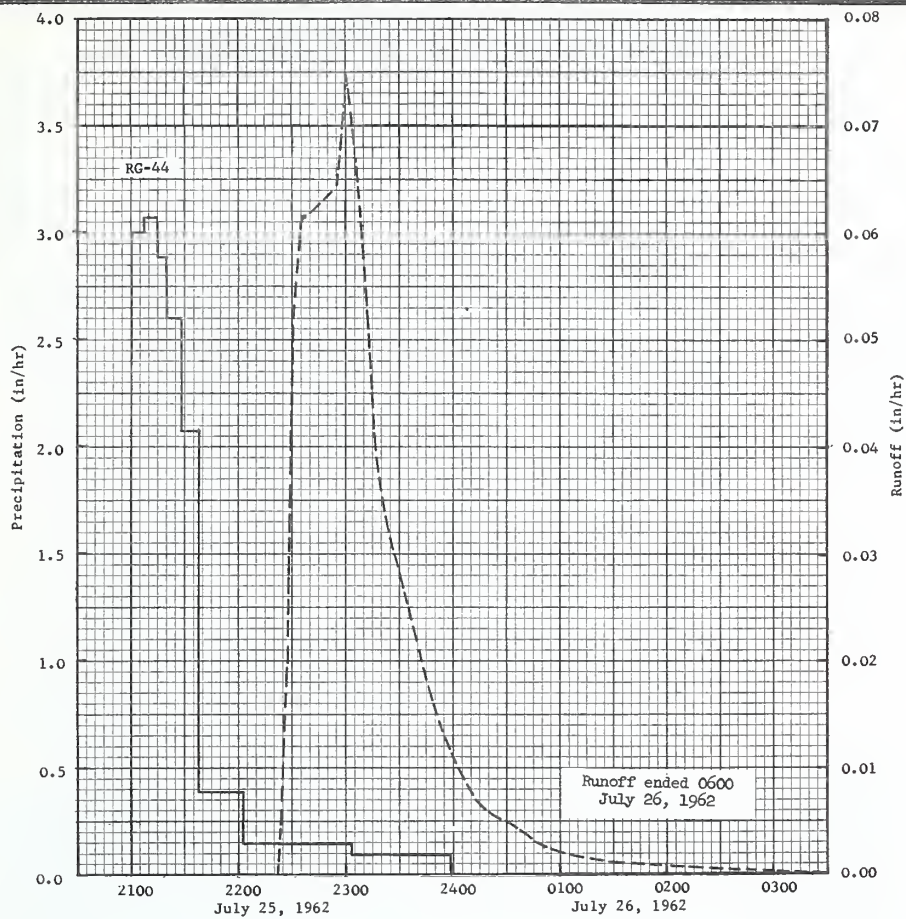
1963			SELECTED RUNOFF EVENTS				TOMBSTONE, ARIZONA		WATERSHED W-6		63.006	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
Event of August 25, 1963												
	RG-58		8-25	RG	58		8-25					
7-25	.17	.0000		1830	.00	.00		1903	.00000	.00000		
7-26	.06	.0000		1834	.60	.04		1909	.00000	T		
7-28	.04	.0000		1838	.90	.10		1917	.00000	T		
7-28	.49	.0026		1842	4.80	.42		1918	.00002	T		
7-29	.42	.0014		1850	.45	.48		1920	.00008	T		
7-31	.91	.0142		1853	1.40	.55		1925	.00008	.00001		
8-2	.53	.0002		1902	1.00	.70		1926	.00048	.00001		
8-10	.36	.0335		1933	.14	.77		1927	.00157	.00003		
8-12	.41	.0079						1928	.00291	.00007		
8-19	.93	.1058						1929	.00424	.00013		
8-21	.06	.0000						1930	.00721	.00023		
8-22	.12	.0000						1931	.00884	.00036		
8-22	.15	.0090						1933	.00989	.00067		
8-25	.05	.0000						1935	.01010	.00100		
	RG-59		8-25	RG	59			1939	.00926	.00165		
7-25	.10	.0000		1835	.00	.00		1940	.01052	.00181		
7-26	.09	.0000		1841	1.00	.10		1941	.01516	.00202		
7-28	.08	.0000		1843	8.10	.37		1943	.01791	.00257		
7-28	1.01	.0026		1846	3.40	.54		1945	.01959	.00319		
7-29	.46	.0014		1855	.47	.61		1950	.02928	.00522		
7-31	.05	.0000		1858	3.00	.76		1955	.03616	.00795		
7-31	.28	.0142		1906	1.42	.95		2000	.04279	.01124		
8-2	.38	.0002		1923	.14	.99		2005	.05068	.01514		
8-9	.03	.0000		1939	.19	1.04		2010	.05828	.01968		
8-10	.03	.0335						2015	.05660	.02447		
8-12	.79	.0079						2020	.05828	.02926		
8-19	.64	.1058						2030	.06117	.03921		
8-21	.05	.0000						2034	.06294	.04334		
8-21	.05	.0000						2037	.06671	.04658		
8-22	.21	.0000						2043	.06715	.05327		
8-22	.17	.0090						2045	.06403	.05546		
8-25	.08	.0000						2050	.04964	.06020		
								2055	.03032	.06353		
								2100	.02084	.06566		
								2105	.01516	.06716		
								2110	.01276	.06832		
								2120	.01201	.07038		
								2130	.01180	.07236		
								2135	.00874	.07322		
								2140	.00702	.07387		
								2145	.00291	.07428		
								2150	.00218	.07449		
								2155	.00230	.07468		
								2200	.00300	.07490		
								2210	.00250	.07536		
								2220	.00206	.07574		
								2230	.00162	.07605		
								2240	.00120	.07628		
								2250	.00096	.07646		
								2300	.00096	.07659		
								2315	.00043	.07673		
								2330	.00027	.07682		
								2345	.00017	.07688		
								2400	.00010	.07691		
							8-26	0030	.00003	.07694		
								0100	.00001	.07695		
								0200	.00000	.07695		

Watershed conditions: Includes subwatersheds W-5, W-8, and W-11. Vegetation cover: Oak woodland and desert shrubs (whitethorn, creosote bush, carbrush, mormonia) occupy approximately 45 percent of the area, with a crown spread of 25 percent cover. The remaining 55 percent of the area supports a grass cover (black grama, curly mesquite grass, tobosa grass, blue grama, and sideots grama) with a basal area of 2.5 percent cover and a shrub cover of approximately 6 percent crown spread.

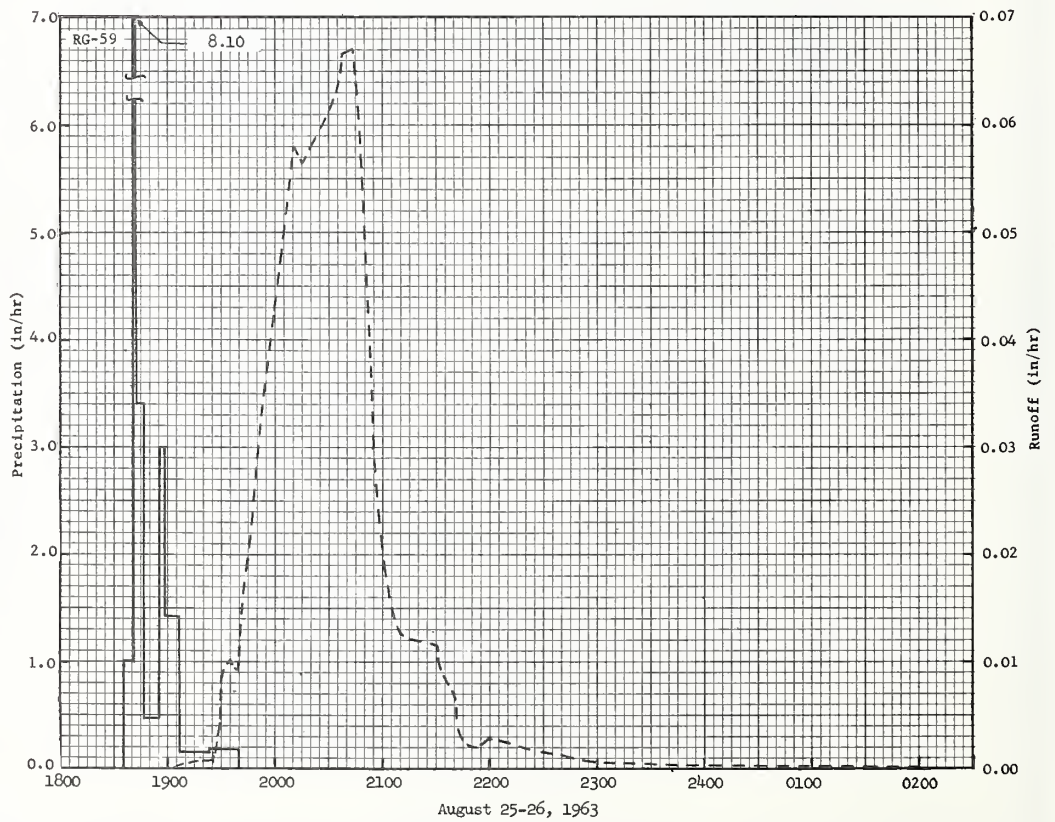
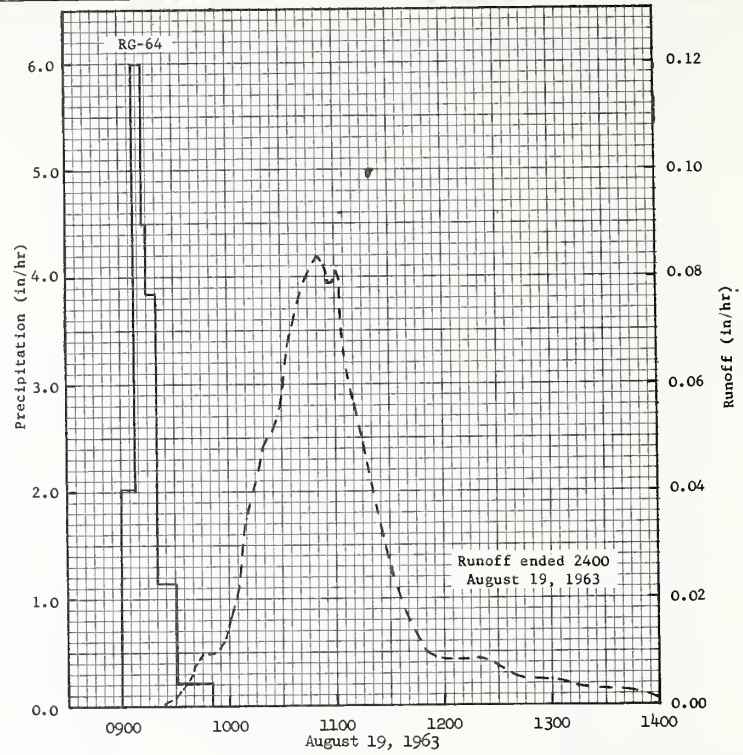
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS MULTIPLY BY 23,695. FOR ISOHYETAL MAP OF EVENT SEE P.63-6-10.

Watershed conditions: Includes subwatersheds W-5, W-8, and W-11. Vegetation cover: Oak woodland and desert shrubs (whitethorn, creosote bush, tarbush, mertonia) occupy approximately 45 percent of the area, with a crown spread of 25 percent cover. The remaining 55 percent of the area supports a grass cover (black grama, curly mesquite grass, tobosa grass, blue grama, and sideoats grama) with a basal area of 2.5 percent cover and a shrub cover of approximately 6 percent crown spread.

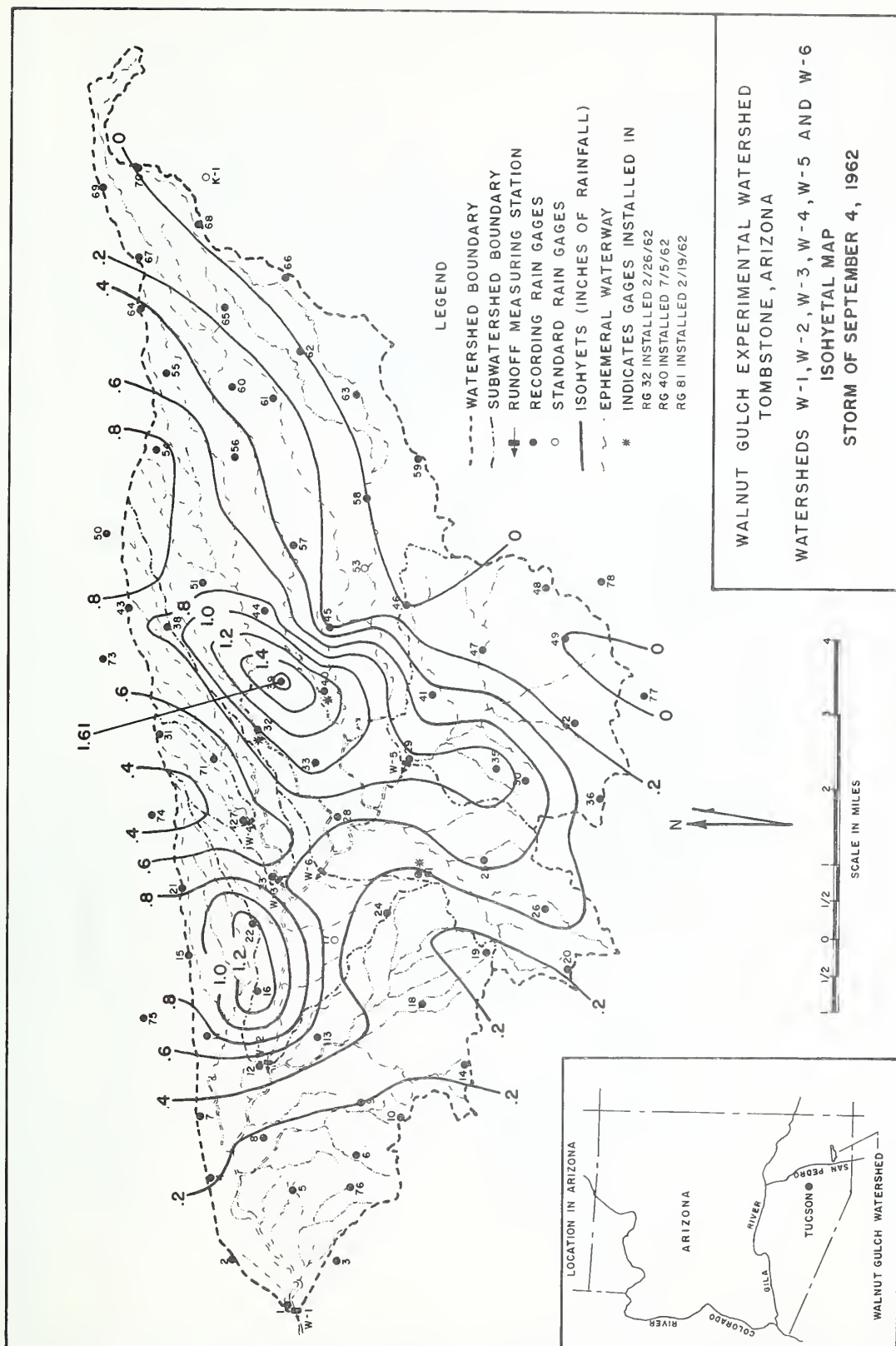
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS MULTIPLY BY 23,695. FOR ISOHYETAL MAP OF EVENT SEE P. 63.6-10.

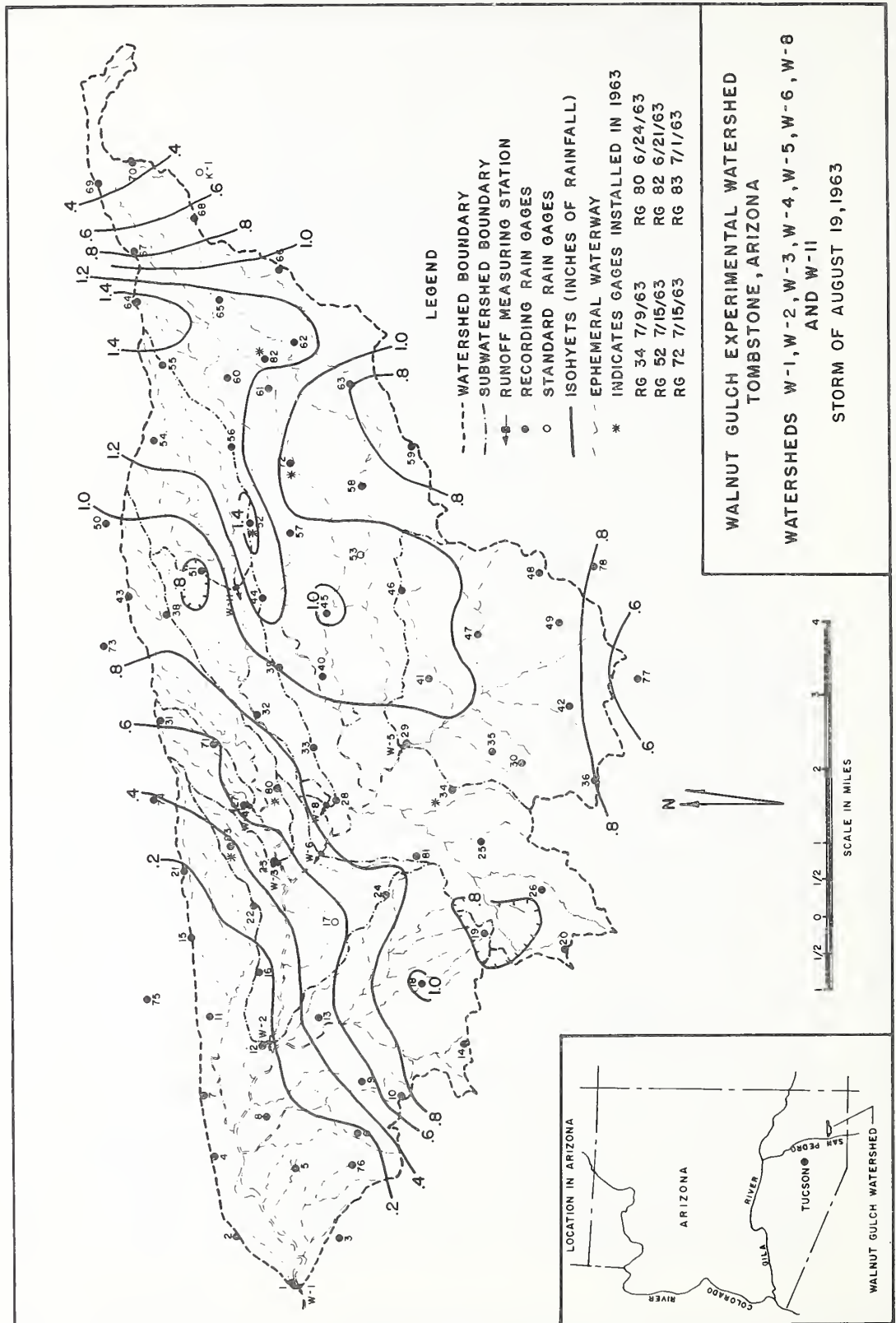


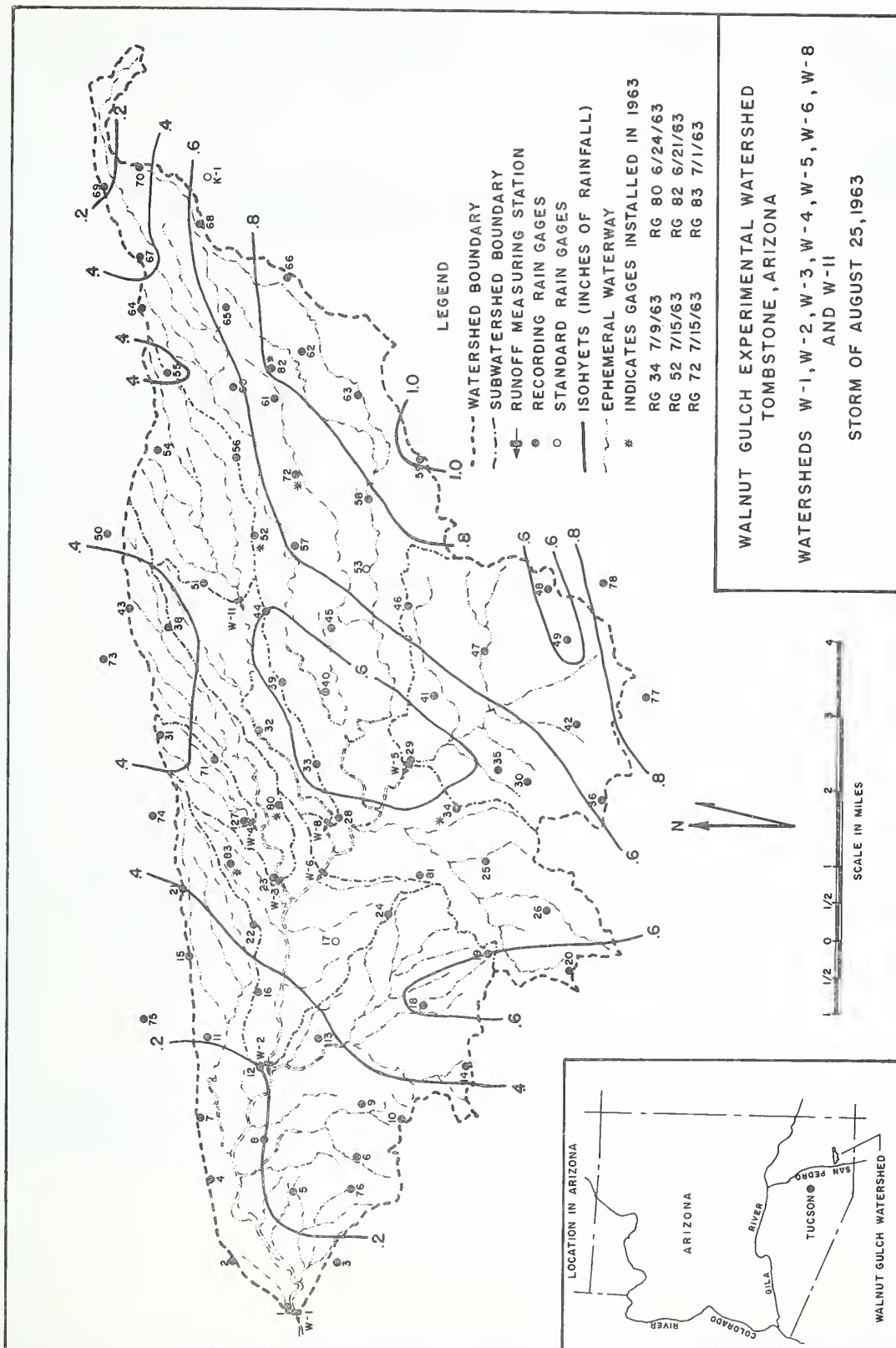
TOMBSTONE, ARIZONA WATERSHED W-6



TOMBSTONE, ARIZONA WATERSHED W-6







MONTHLY PRECIPITATION AND RUNOFF (inches)						SANTA ROSA, NEW MEXICO AREA—42,880 ACRES (67 SQ. MILES)								WATERSHED W-1 64.001		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC	ANNUAL			
1963 P 1/ Q	.00 .00	.16 .00	.12 .00	.49 .00	1.30 .00	.77 .00	.54 .00	3.82 .01	.05 .00	.35 .00	.00 .00	.00 .00	7.60 .01			
STA AV 2/P (56-63) Q	.21 .00	.15 .00	.49 .00	.43 .00	.91 T	1.46 .21	2.91 .25	1.78 .06	.96 .02	1.09 T	.15 .00	.55 .00	11.09 .54			
MEAN P 3/ 56 YR	.37	.43	.62	.81	1.74	1.44	2.40	2.46	1.49	1.23	.39	.55	13.93			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-30	.0010	8-31	.0016	8-31	.0023	8-31	.0042	8-31	.0062	8-30	.0103	8-30	.0108	8-30	.0108
MAXIMUMS FOR PERIOD OF RECORD																
19 55 TO 1963	6-5 1960	.1718	6-5 1960	.1713	6-5 1960	.3327	6-5 1960	.6975	6-5 1960	.8304	6-5 1960	.9197	6-5 1960	1.08	7-4 1960	1.26
Notes: Quality of runoff records: (Revision) Upon re-evaluation of accuracy, the runoff data are now considered to be very poor (± 25% of actual), for the period 1955-63. Watershed conditions: Grazing land, about 75% of the area is grassland, vegetation consisting of blue grama, galleta, buffalo and ring muhly. Remaining 25% of area is pinon, juniper, and various shrubs, with some grasses interspersed. 1/ Monthly precipitation is arithmetic average of 61 rain gages. 2/ Precipitation and runoff records began in 1955, but summer runoff incomplete that year, so 1955 not included in averages. 3/ Mean P based on 56-yr (1908-63) U.S. Weather Bureau record period at Santa Rosa, N. Mex.																
NO SUITABLE SELECTED EVENT TO PRESENT																

Cooperative Research Project of USDA and New Mexico Agricultural Experiment Station

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA						WATERSHED W-2		57M-2
						(AREA— 115 ACRES)								
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	1/ P	.29	.73	.67	1.75	1.12	5.37	2.10	.25	1.19	.56	.00	.16	14.19
	Q	.08	.13	.00	.04	.04	.09	.06	.00	.00	.00	.00	.00	.41
STA AV2/	P	.19	.30	.30	.96	1.94	2.59	1.77	.97	1.19	.59	.29	.19	11.28
(58-63)	Q	.02	.05	.16	T	.04	.05	.07	.01	.02	T	T	T	.42
MEAN P 3/														
56 YR		.43	.37	.76	1.66	2.67	2.98	2.11	1.35	1.29	1.01	.52	.38	15.53

NOTES: Watershed conditions: 100% rangeland. Condition classes: excellent - 19%, good - 64%, fair - 17%. Degree of grazing - full. 1/ Precipitation from rain gage W-2A. 2/ Precipitation and runoff records began January 1958. 3/ Mean P based on 56-yr. (1908-1963) U. S. Weather Bureau record period at Newell, S. D.

GEOLOGY: Fox Hills sandstone formation of Upper Cretaceous age makes up the surface sediments. The area lies north-northeast of the Black Hills uplift and the underlying formations dip approximately 0.3 degrees in the same general direction.

Formations (Upper Cretaceous)

Approximate thickness

Fox Hills (sandstone and shale)	40 ft.
Pierre (argillaceous shale)	1900 ft.
Niobrara (chalk with intermingling of shale beds)	700 ft.
Greenhorn (calcareous shale with interbedded limestone beds)	700 ft.
Newcastle sandstone (sandstone with sandy shale beds)	400 ft.

Source of data: Oil tests in South Dakota, 1961, and Report of Investigations Nos. 3 and 68, South Dakota Geological Survey.

1963 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA						WATERSHED W-2		57M-2
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1		.05				.33			.55	.04				
2				.24		.36			.04					
3				.36	.14	.24			.47					
4						.10	.02							
5						.13	.09							
6							.24							
7		.02												
8		.04				.32		.08						
9	.03	.06					.47						.03	
10	.01												.05	
11					.44	.12	.06							
12					.36									
13														
14	.05						.39		.06					
15	.02					2.77	.16							
16	.10			.03									.08	
17				.06		.06								
18	.04			.10			.20		.07					
19							.14							
20		.02		.36		.24		.03						
21	.04	.11												
22		.24				.28		.14						
23						.12								
24			.67			.30								
25		.17			.06		.20							
26							.13							
27		.02		.38	.12									
28				.04										
29				.18						.04				
30										.48				
31														
TOTAL	.29	.73	.67	1.75	1.12	5.37	2.10	.25	1.19	.56			.16	
STAAV	.19	.30	.30	.96	1.94	2.59	1.77	.97	1.19	.59	.29		.19	

NOTES: ALL PRECIPITATION FROM JAN 1 TO APR 22 AND NOV 15 TO DEC 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. PRECIPITATION OBTAINED FROM RAIN GAGE W-2A. STA AV IS BASED ON PERIOD 1958-63. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.2-4.

1963 MEAN DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA		WATERSHED W-2			57M-2	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1						T						
2												
3												
4												
5												
6							T					
7	.08											
8												
9												
10												
11												
12					.04							
13												
14												
15						.09	T					
16												
17												
18							.02					
19							.03					
20							.01					
21												
22		.13										
23												
24												
25					T	T						
26												
27												
28												
29												
30		-----		-----		-----			-----		-----	
31												
MEAN												
INCHES	.08	.13			.04	.09	.06					

NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA				WATERSHED W-5 (AREA — 46 ACRES)				57M-5
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	1/ P	.30	.49	.91	1.65	1.90	6.32	1.54	.42	1.17	.68	.03	.16	15.57
	2/ Q	.00	.00	.07	T	T	.76	T	.00	.00	.00	.00	.00	.83
STA AV	2/ P	.19	.29	.43	.99	2.32	3.19	1.58	.92	.97	.44	.18	.24	11.74
(58-63)	Q	T	.01	.12	.01	.06	.20	.05	.01	T	.00	.00	.00	.46
MEAN P	3/													
56 YR		.43	.37	.76	1.66	2.67	2.98	2.11	1.35	1.29	1.01	.52	.38	15.53
NOTES: Watershed conditions: 100% rangeland. Condition classes: excellent - 7%, good - 93%. Degree of grazing: full. Production of cover: 2264 lbs./ac. of oven dry material. 1/ Precipitation from rain gage W-5A. 2/ Precipitation and runoff records began January 1958. 3/ Mean P based on 56-yr. (1908-1963) U. S. Weather Bureau record period at Newell, S. D.														
GEOLOGY: Fox Hills sandstone formation of Upper Cretaceous age makes up the surface sediments. The area lies north-northeast of the Black Hills uplift and the underlying formations dip approximately 0.3 degrees in the same general direction.														
Formations (Upper Cretaceous)						Approximate thickness								
Fox Hills (sandstone and shale)						60 ft.								
Pierre (argillaceous shale)						2200 ft.								
Niobrara (chalk with intermingling of shale beds)						550 ft.								
Greenhorn (calcareous shale with interbedded limestone beds)						600 ft.								
Newcastle sandstone (sandstone with sandy shale beds)						400 ft.								
Source of data: Oil tests in South Dakota, 1961, and Report of Investigations Nos. 3 and 68, South Dakota Geological Survey.														

1963 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA				WATERSHED W-5				57M-5
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	OEC	
1				.02		.06			.60					
2		.02	.01	.15		.22	.03		.04					
3				.17	.30	.50			.29					
4														
5						.21								
6														
7			.01										.07	
8		.02				.35								
9	.04	.07	.02		.03		.15							
10	.06			.52	.03								.01	
11		.02	.05		.40	.45							.03	
12			.03		.35		.27							
13														
14	.10													
15	.03			.14		2.93	.20							
16			.10	.02									.01	
17								.35						
18				.05	.01		.10		.02					
19	.01	.05		.03	.04		.04							
20	.06			.02		.20								
21				.12		.12					.03		.02	
22		.04		.10		1.25		.07	.02					
23		.05				.03			.02					
24		.02	.65						.18					
25		.05	.04		.65		.13							
26		.04			.10									
27		.05		.22			.44							
28		.06		.02			.05							
29				.10						.10				
30							.10			.58			.02	
31							.03							
TOTAL	.30	.49	.91	1.65	1.90	6.32	1.54	.42	1.17	.68	.03	.16		
STA AV	.19	.29	.43	.99	2.32	3.19	1.58	.92	.97	.44	.18	.24		

NOTES: ALL PRECIPITATION FROM JAN 1 TO APR 22 AND NOV 15 TO DEC 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. PRECIPITATION OBTAINED FROM RAIN GAGE W-5A. STA AV IS BASED ON PERIOD 1958-63. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.5-4.

1963 MEAN DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-5 57M-5						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11					T							
12												
13												
14												
15			.07			.52						
16												
17												
18												
19												
20						T						
21						.24						
22						T						
23				T								
24												
25												
26							T					
27												
28				T								
29												
30		-----										
31		-----		-----		-----			-----		-----	
MEAN			.07	T	T	.76	T					
INCHES												

NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-7 (AREA — 160 ACRES)								57M-7
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	1/P	.30	.64	.81	1.91	2.10	5.61	2.05	.50	1.28	.58	.03	.20	16.01
	2/Q	.00	.04	.01	.00	.00	.10	.02	.00	.00	.00	.00	.00	.17
	STA AV 2/P	.21	.36	.46	1.08	2.37	3.20	1.73	1.04	1.04	.46	.25	.27	12.47
	(58-63) Q	.00	.01	.13	.00	.03	.11	.06	.01	T	.00	.00	.00	.35
MEAN P 3/														
56 YR		.43	.37	.76	1.66	2.67	2.98	2.11	1.35	1.29	1.01	.52	.38	15.53

NOTES: Watershed conditions: 100% rangeland. Condition classes: good - 82%, fair - 18%. Degree of grazing: full.
 1/ Precipitation from rain gage W-7A. 2/ Precipitation and runoff records began January 1958. 3/ Mean P based on 56-yr. (1908-1963) U. S. Weather Bureau record period at Newell, S. D.

GEOLOGY: Fox Hills sandstone formation of Upper Cretaceous age makes up the surface sediments. The area lies north-northeast of the Black Hills uplift and the underlying formations dip approximately 0.3 degrees in the same general direction.

Formations (Upper Cretaceous)

Approximate thickness

Fox Hills (sandstone and shale)	60 ft.
Pierre (argillaceous shale)	2200 ft.
Niobrara (chalk with intermingling of shale beds)	550 ft.
Greenhorn (calcareous shale with interbedded limestone beds)	600 ft.
Newcastle sandstone (sandstone with sandy shale beds)	400 ft.

Source of data: Oil tests in South Dakota, 1961, and Report of Investigations Nos. 3 and 68, South Dakota Geological Survey.

1963 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-7								57M-7
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1				.02		.02			.64					
2		.02	.01	.05		.23	.07		.05					
3				.07	.50	.23			.32					
4														
5						.30								
6						.06							.09	
7			.01											
8		.02				.21								
9	.04	.08	.02		.03		.25							
10	.06			.67	.03								.02	
11		.02	.05		.40	.40								
12			.03		.30		.51						.04	
13														
14	.10						.14							
15	.03			.16		2.64	.30							
16			.10	.02									.01	
17								.42						
18				.11	.01		.08		.02					
19	.01	.08			.03		.03							
20	.06			.02		.12								
21				.21		.17					.03	.02		
22		.09		.20		1.20		.05	.05					
23		.05				.03			.02					
24		.07	.55						.18					
25		.06	.04		.65		.23							
26		.04			.15									
27		.05		.21			.32							
28		.06		.02			.01							
29				.15				.08		.10			.02	
30							.03	.03		.48				
31														
TOTAL	.30	.64	.81	1.91	2.10	5.61	2.05	.50	1.28	.58	.03	.20		
STA AV	.21	.36	.46	1.08	2.37	3.20	1.73	1.04	1.04	.46	.25	.27		

NOTES: ALL PRECIPITATION FROM JAN 1 TO APR 22 AND NOV 15 TO DEC 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN.
 PRECIPITATION OBTAINED FROM RAIN GAGE W-7A. STA AV IS BASED ON PERIOD 1958-63. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.7-4.

1963 MEAN DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-7 57M-7						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1												
2												
3												
4												
5												
6												
7		.04										
8												
9												
10												
11							.01					
12												
13												
14						.03						
15												
16												
17			.01									
18												
19												
20												
21						.07						
22												
23												
24												
25												
26							.01					
27												
28												
29		-----										
30		-----										
31		-----		-----		-----			-----		-----	
MEAN												
INCHES		.04	.01			.10	.02					
NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA		WATERSHED W-12 (AREA — 90 ACRES)				57F-12		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 $\frac{1}{P}$	.44	.72	.42	2.94	.79	4.94	2.90	.34	1.56	.82	.11	.16	16.14
$\frac{Q}{P}$	.00	.05	.20	.46	.00	.93	.35	.00	.00	.00	.00	.00	1.99
STA AV $\frac{2}{P}$	.24	.31	.43	1.27	2.44	3.51	1.88	.83	1.04	.49	.27	.20	12.91
(58-63) $\frac{Q}{P}$	.00	.03	.38	.19	.70	.72	.21	.09	T	T	.01	.01	2.34
MEAN $\frac{P}{3}$														
56 YR	.43	.37	.76	1.66	2.67	2.98	2.11	1.35	1.29	1.01	.52	.38	15.53	

NOTES: Watershed conditions: 100% rangeland. Condition classes: good - 94%, fair - 6%. Degree of grazing: close.
 1/ Precipitation from rain gage W-12A. 2/ Precipitation and runoff records began January 1958. 3/ Mean P
 Based on 56-yr. (1908-1963) U. S. Weather Bureau record period at Newell, S. D.

GEOLOGY: Pierre shale of the Upper Cretaceous age makes up the surface sediments. The area lies north-northeast of the Black Hills uplift and the underlying formations dip approximately 0.3 degrees in the same general direction.

Formations (Upper Cretaceous)

Approximate thickness

Pierre (argillaceous shale)	400 ft.
Niobrara (chalk with intermingling of shale beds)	700 ft.
Greenhorn (calcareous shale with interbedded limestone beds)	800 ft.
Newcastle (sandstone with sandy shale beds)	250 ft.

Source of data: Oil tests in South Dakota, 1961, and Report of Investigations Nos. 3 and 68, South Dakota Geological Survey.

1963 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA		WATERSHED W-12				57F-12		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1		.02	.02	.07		.42				.78				
2				.08		.42	.30			.10				
3				.13						.47				
4														
5						.80								
6						.05							.09	
7						.02								
8		.01				.46								
9	.06	.05		.02	.10		.40						.03	
10	.03	.02		.88		.42							.01	
11	.01				.12			.03			.08			
12					.18		1.32	.12			.03		.03	
13	.02									.10				
14	.08						.15			.14				
15				.12		1.50								
16			.23	.03	.13				.18					
17	.04		.17	.04										
18				.06					.03					
19		.08		.03										
20	.10			.03		.59								
21				.07		.03								
22		.09		.29		.17								
23		.07				.06								
24	.04	.08												
25		.07			.04		.10							
26		.08			.19		.43							
27		.07		.78			.20							
28		.08		.12										
29				.19										
30		-----								.56				
31	.06	-----		-----	.03	-----		.19	-----	.02	-----			
TOTAL	.44	.72	.42	2.94	.79	4.94	2.90	.34	1.56	.82	.11	.16		
STA AV	.24	.31	.43	1.27	2.44	3.51	1.88	.83	1.04	.49	.27	.20		

NOTES: ALL PRECIPITATION FROM JAN 1 TO APR 22 AND NOV 15 TO DEC 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN.
 PRECIPITATION OBTAINED FROM RAIN GAGE W-12A. STA AV IS BASED ON PERIOD 1958-63. FOR MAP OF WATERSHED, SEE HYDROLOGIC
 DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.12-4.

1963 MEAN DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-12 57F-12						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1						.01						
2							.01					
3				.03								
4												
5				.06		.12						
6				.03								
7		.05		.01								
8						.07						
9												
10				.13		.06						
11												
12							.34					
13												
14												
15						.65						
16			.01									
17												
18												
19												
20			.04			.01						
21			.14			.01						
22			.01	.03								
23												
24												
25												
26												
27				.12								
28				.01								
29				.04								
30		-----										
31		-----		-----		-----			-----		-----	
MEAN												
INCHES		.05	.20	.46		.93	.35					

NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.

1963 MEAN DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-13 57F-13						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1												
2				.01					T			
3												
4				.01								
5												
6												
7		.07				.02						
8												
9												
10				.01								
11						.01						
12							.01					
13												
14												
15						.03						
16												
17												
18							T					
19												
20												
21						T						
22												
23												
24												
25												
26												
27												
28												
29			.02									
30		-----		-----		-----			-----		-----	
31												
MEAN												
INCHES		.07	.02	.03		.06	.01		T			
NOTES:	DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON FOND.											

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-14 (AREA — 35 ACRES)						57F-14	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963 1/ P	.58	.89	.64	3.99	.70	5.26	1.34	.45	1.15	.91	.11	.28	16.30
Q	.00	.00	.12	.34	.01	.42	.03	.00	.02	.00	.00	.00	.94
STA AV2/ P	.29	.32	.44	1.62	2.44	3.42	2.13	.80	.92	.58	.36	.28	13.60
(58-63) Q	.00	.04	.22	.09	.22	.50	.24	.03	.01	T	.01	T	1.36
MEAN P 3/													
56 YR	.43	.37	.76	1.66	2.67	2.98	2.11	1.35	1.29	1.01	.52	.38	15.53
NOTES: Watershed conditions: 100% rangeland. Condition classes: good - 54%, fair - 46%. Degree of grazing: full. 1/ Precipitation from rain gage W-14A. 2/ Precipitation and runoff records began January, 1958. 3/ Mean P based on 56-yr. (1908-1963) U. S. Weather Bureau record period at Newell, S. D.													
GEOLOGY: Pierre shale of the Upper Cretaceous age makes up the surface sediments. The area lies north-northeast of the Black Hills uplift and the underlying formations dip approximately 0.3 degrees in the same general direction.													
Formations (Upper Cretaceous)						Approximate thickness							
Pierre (argillaceous shale)						400 ft.							
Niobrara (chalk with intermingling of shale beds)						700 ft.							
Greenhorn (calcareous shale with interbedded limestone beds)						800 ft.							
Newcastle (sandstone with sandy shale beds)						250 ft.							
Source of data: Oil tests in South Dakota, 1961, and Report of Investigations Nos. 3 and 68, South Dakota Geological Survey.													
1963 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-14						57F-14	
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1		.02		.02		.25			.75				
2		.07		.05		.85	.12		.10				
3			.03	1.13					.30				
4						.14							
5						.90							
6						.12							.11
7			.10			.38					.04		
8			.07					.13					
9	.10				.20		.14						.11
10	.05	.06		.73		.26					.07		.02
11	.04		.15		.15	.12							
12			.10		.10			.07					
13										.30			
14	.04					.04	.53						
15	.07			.19	.05	1.55							
16				.16	.07								
17			.09										
18	.04			.05									
19				.05									
20		.22				.25				.10			
21	.10			.05		.40							
22		.03		.32				.10					.01
23		.02											.03
24		.07	.10										
25	.14	.19					.09						
26		.03			.13		.26						
27		.03		.80			.13						
28		.15		.32									
29				.12			.07						
30								.15		.47			
31										.04			
TOTAL	.58	.89	.64	3.99	.70	5.26	1.34	.45	1.15	.91	.11	.28	
STA AV	.29	.32	.44	1.62	2.44	3.42	2.13	.80	.92	.58	.36	.28	
NOTES: ALL PRECIPITATION FROM JAN 1 TO APR 22 AND NOV 15 TO DEC 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. PRECIPITATION OBTAINED FROM RAIN GAGE W-14A. STA AV IS BASED ON PERIOD 1958-63. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.14-4.													

1963 MEAN DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-14 57F-14						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1									.01			
2						T	.01					
3				.04					.01			
4						T						
5												
6												
7						.02						
8												
9					.01							
10				.06								
11						.01						
12					T							
13												
14							.01					
15						.38						
16			.03									
17												
18												
19												
20												
21						.01						
22			.08									
23				.03								
24			.01									
25							T					
26												
27				.15			.01					
28				.01								
29				.05								
30												
31												
MEAN			.12	.34	.01	.42	.03		.02			
INCHES												

NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA				WATERSHED W-15 (AREA— 115 ACRES)				57F-15
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	1/ P	.58	.89	.86	4.11	.75	5.15	1.40	.48	1.34	.92	.10	.28	16.86
	Q	.00	.00	.10	.33	.00	.26	.01	.00	.00	.00	.00	.00	.70
	STA AV 2/ P	.40	.33	.48	1.73	2.62	3.47	2.31	.84	.96	.64	.43	.30	14.51
	(58-63) Q	.00	.01	.13	.13	.27	.42	.28	.02	.01	T	.01	.00	1.28
MEAN	P 3/													
56 YR		.43	.37	.76	1.66	2.67	2.98	2.11	1.35	1.29	1.01	.52	.38	15.53

NOTES: Watershed conditions: 100% rangeland. Condition classes: good - 41%, fair - 59%. Degree of grazing: full.
 1/ Precipitation from rain gage W-15A. 2/ Precipitation and runoff records began January, 1958. 3/ Mean P based on 56-yr. (1908-1963) U. S. Weather Bureau record period at Newell, S. D.

GEOLOGY: Pierre shale of the Upper Cretaceous age makes up the surface sediments. The area lies north-northeast of the Black Hills uplift and the underlying formations dip approximately 0.3 degrees in the same general direction.

Formations (Upper Cretaceous)

Approximate thickness

Pierre (argillaceous shale)	400 ft.
Niobrara (chalk with intermingling of shale beds)	700 ft.
Greenhorn (calcareous shale with interbedded limestone beds)	800 ft.
Newcastle (sandstone with sandy shale beds)	250 ft.

Source of data: Oil tests in South Dakota, 1961, and Report of Investigations Nos. 3 and 68, South Dakota Geological Survey.

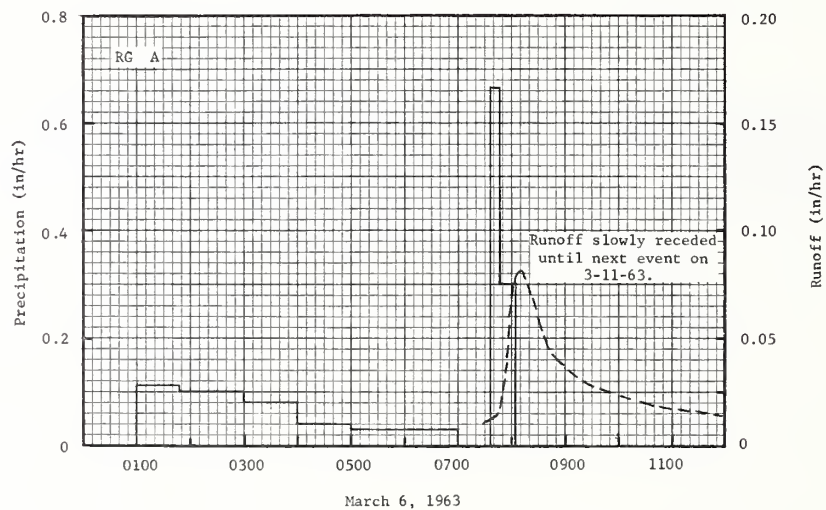
1963 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA			WATERSHED W-15			57F-15
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1		.02		.02		.25			.80			
2		.07		.05		1.07	.12		.10			
3			.03	1.13					.44			
4						.14						
5						.84						
6						.12						.11
7			.10			.28					.03	
8			.10					.13				
9	.10				.20		.18					.11
10	.05	.06		.73		.23					.07	.02
11	.04				.17	.14						
12			.29		.16			.07				
13			.15							.29		
14	.04					.04	.50					
15	.07			.19	.06	1.38						
16				.16	.06							
17			.09									
18	.04			.10								
19				.06								
20		.22				.23				.10		
21	.10			.08		.43						.01
22		.03		.34				.10				.03
23		.02										
24		.07	.10									
25	.14	.19					.07					
26		.03			.10		.33					
27		.03		.77			.13					
28		.15		.36								
29				.12			.07					
30		-----						.18		.50		
31		-----		-----		-----			-----	.03	-----	
TOTAL	.58	.89	.86	4.11	.75	5.15	1.40	.48	1.34	.92	.10	.28
STA AV	.40	.33	.48	1.73	2.62	3.47	2.31	.84	.96	.64	.43	.30

NOTES: ALL PRECIPITATION FROM JAN 1 TO APR 22 AND NOV 15 TO DEC 31 IS SNOW: ALL OTHER PRECIPITATION IS RAIN. PRECIPITATION OBTAINED FROM RAIN GAGE W-15A. STA AV IS BASED ON PERIOD 1958-63. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.15-4.

1963 MEAN DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-15 57F-15						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1												
2						T						
3				.02								
4												
5						.03						
6												
7						.02						
8												
9												
10				.06								
11						.01						
12												
13												
14							T					
15						.19						
16			.04									
17												
18												
19				T								
20						T						
21			.06			.01						
22				.01								
23				.07								
24												
25												
26												
27				.09			.01					
28				.03								
29				.05								
30												
31												
MEAN			.10	.33		.26	.01					
INCHES												

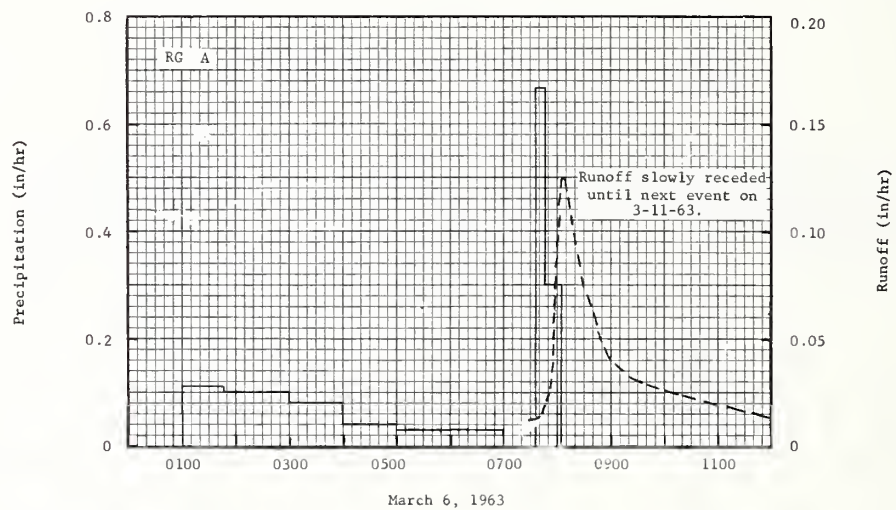
NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.

MONTHLY PRECIPITATION AND RUNOFF (inches)						MOOREFIELD, WEST VIRGINIA				WATERSHED W-1				66.01		
						AREA—8.57 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.72 .62	1.44 .32	6.36 3.27	2.07 .13	1.48 .00	4.40 .00	1.61 .00	2.34 .00	1.79 .00	.18 .00	3.90 T	1.70 T	27.99 4.34			
STA AV 2/ (58-63) P Q	1.34 .19	2.38 .73	3.25 1.46	2.57 .38	3.25 .27	3.18 .08	2.91 .01	2.42 .08	2.52 .02	1.67 .02	1.84 .02	1.88 .03	29.21 3.29			
MEAN P 3/ 68 YR	2.18	2.04	2.79	2.71	3.40	3.78	3.56	3.37	2.50	2.37	1.79	1.98	32.47			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-19	.16	3-19	.14	3-19	.25	3-19	.68	3-19	.89	3-20	1.08	3-21	1.20	3-20	1.81
MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1963	8-3 1958	.44	8-3 1958	.17	3-19 1963	.25	3-19 1963	.68	3-19 1963	.89	3-20 1963	1.08	3-12 1962	1.35	3-11 1962	1.87
Notes: Watershed conditions: 100% permanent pasture. 1/ Rainfall records from rain gage A. 2/ Precipitation records began April 1958, runoff records began June 1958. 3/ Mean P based on 68 yr (1896-1963) U.S. Weather Bureau record period at or near Moorefield, W. Va. No records for 7 months each in 1915 and 1922, or for Mar. through June 1933. Missing records from July 1933 through Sept. 1940, Feb. through May 1948, and full years 1959 through 1963 supplied from Moorefield McNeill station, 9 miles NNE of Moorefield, W. Va.																
1963 SELECTED RUNOFF EVENT						MOOREFIELD, WEST VIRGINIA				WATERSHED W-1				66.01		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG A			Event of March 6 and 7, 1963												
				RG	A											
2-6	.00	4/ .0009	3-6	0100	.00	.00	3-6	0728	.0111	.0000						
2-7	.00	.0029		0148	.11	.09		0740	.0137	.0025						
2-8	.00	.0029		0300	.10	.21		0744	.0150	.0034						
2-8	.00	.0029		0400	.08	.29		0756	.0450	.0095						
2-11	.00	.0014		0500	.04	.33		0806	.0779	.0197						
2-12	.48	.0000		0700	.03	.39		0810	.0812	.0250						
2-19	.68	.0000		0738	.00	.39		0812	.0812	.0277						
2-20	.00	.0737		0747	.67	.49		0834	.0524	.0522						
2-21	.00	.0573		0805	.30	.58		0846	.0427	.0617						
2-22	.00	1.000						0854	.0382	.0671						
2-23	.00	.0139						0908	.0339	.0755						
2-24	.00	.0139						1024	.0211	.1103						
2-25	.00	.0084						1140	.0150	.1332						
2-26	.00	.0058						1230	.0124	.1446						
2-27	.00	.0110						1510	.0078	.1715						
2-28	.00	.0115						1840	.0058	.1952						
3-1	.62	.0411						2100	.0047	.2075						
3-2	.05	.0345						2400	.0047	.2217						
3-3	.00	.0334					3-7	0110	6/ .0039	.2267						
3-4	.59	.0589														
3-5	.32	5/ .3094														
3-6	.00	.1097														
Watershed conditions: Dormant. Permanent pasture. Poor cover.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 8.6414. FOR REVISED MAP OF WATERSHEDS, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 66.1-3. 4/ RUNOFF FROM 0728 TO 2400. 5/ RUNOFF FROM 0001 TO 0728. 6/ RUNOFF SLOWLY RECEDES UNTIL NEXT EVENT on 3-11-63.																



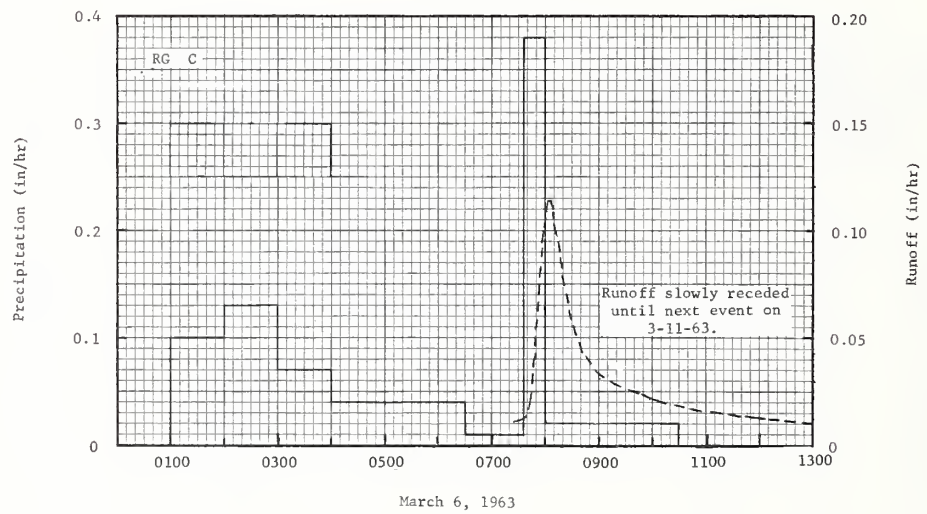
MOOREFIELD, WEST VIRGINIA WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)						MOOREFIELD, WEST VIRGINIA AREA—9.73 ACRES		WATERSHED W-2		66.02						
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/ Q	.72 .50	1.44 .13	6.36 3.48	2.07 .03	1.48 T	4.40 T	1.61 .00	2.34 .00	1.79 .00	.18 .00	3.90 .01	1.70 .05	27.99 4.20			
STA AV2/P (58-63) Q	1.34 .25	2.38 .79	3.25 1.49	2.57 .43	3.25 .35	3.18 .11	2.91 .05	2.42 .11	2.52 .05	1.67 .05	1.84 .04	1.88 .09	29.21 3.81			
MEAN P 3/ 68 YR	2.18	2.04	2.79	2.71	3.40	3.78	3.56	3.37	2.50	2.37	1.79	1.98	32.47			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-19	.18	3-19	.17	3-19	.31	3-19	.82	3-20	1.05	3-20	1.21	3-21	1.26	3-20	2.02
MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1963	8-3 1958	.76	8-2 1958	.36	8-3 1958	.38	3-19 1963	.82	3-20 1963	1.05	3-20 1963	1.21	3-12 1962	1.44	3-20 1963	2.02
Notes: Watershed conditions: 100% permanent pasture. 1/ Rainfall records from rain gage A. 2/ Precipitation records began April 1958, runoff records began June 1958. 3/ Mean P based on 68-yr (1896-1963) U.S. Weather Bureau record period at or near Moorefield, W. Va. No records for 7 months each in 1915 and 1922, or for Mar. through June 1933. Missing records from July 1933 through Sept. 1940, Feb. through May 1948, and full years 1959 through 1963 supplied from Moorefield McNeill station, 9 miles NNE of Moorefield, W. Va.																
1963 SELECTED RUNOFF EVENT						MOOREFIELD, WEST VIRGINIA						WATERSHED W-2		66.02		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 6, 1963																
	RG A			RG	A											
2-12	.48	4/.0007	3-6	0100	.00	.00	3-6	0728	.0120	.0000						
2-19	.68	.0012		0148	.11	.09		0738	.0133	.0021						
2-20	.00	.0686		0300	.10	.21		0743	.0158	.0033						
2-21	.00	.0498		0400	.08	.29		0752	.0281	.0066						
2-22	.00	.0085		0500	.04	.33		0758	.0633	.0112						
2-24	.00	.0011		0700	.03	.39		0802	.1026	.0167						
2-27	.00	.0004		0738	.00	.39		0806	.1241	.0243						
2-28	.00	.0018		0747	.67	.49		0809	.1241	.0305						
3-1	.62	.0546		0805	.30	.58		0817	.1061	.0458						
3-2	.05	.0655						0830	.0743	.0654						
3-3	.00	.0263						0842	.0581	.0786						
3-4	.59	.1597						0859	.0417	.0928						
3-5	.32	.4018						0912	.0356	.1011						
3-6	.00	5/.1479						1000	.0264	.1260						
								1130	.0158	.1576						
Watershed conditions: Dormant. Permanent pasture. Poor cover.									1700	.0051	.2151					
								2040	.0035	.2308						
								2400	6/.0035	.2424						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 9.8111. FOR REVISED MAP OF WATERSHEDS, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 66.2-3. 4/ RUNOFF FROM 0728 TO 2400. 5/ RUNOFF FROM 0001 TO 0728. 6/ RUNOFF SLOWLY RECEDES UNTIL NEXT RUNOFF EVENT ON 3-11-63.																



MOOREFIELD, WEST VIRGINIA WATERSHED W-2

MONTHLY PRECIPITATION AND RUNOFF (inches)						MOOREFIELD, WEST VIRGINIA AREA—6.32 ACRES				WATERSHED W-4				66.04		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P1/ Q	.70 .41	1.39 .13	6.27 2.57	2.05 .01	1.48 T	4.68 .04	1.29 .00	2.55 .01	1.73 T	.17 .00	3.86 .03	1.65 .07	27.82 3.27		
STA AV2/ (58-63) Q	P	1.40	2.51	3.34	2.56	3.71	3.42	2.94	2.56	2.51	1.65	1.93	1.85	30.38		
	Q	.15	.60	1.04	.22	.21	.06	.07	.13	.06	.05	.04	.07	2.70		
MEAN P 3/ 68 YR		2.18	2.04	2.79	2.71	3.40	3.78	3.56	3.37	2.50	2.37	1.79	1.98	32.47		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-19	.15	3-19	.13	3-19	.24	3-19	.64	3-19	.76	3-20	.85	3-21	.91	3-19	1.41
MAXIMUMS FOR PERIOD OF RECORD																
19 58 TO 19 63	8-3 1958	.69	8-3 1958	.27	2-19 1961	.31	3-19 1963	.64	3-19 1963	.76	3-20 1963	.85	2-18 1961	.97	2-17 1961	1.54
Notes: Watershed conditions: 100% permanent pasture with controlled grazing. 1/ Precipitation data obtained from rain gage C. 2/ Precipitation and runoff records began June 1958. 3/ Mean P based on 68-yr (1896-1963) U.S. Weather Bureau record period at or near Moorefield, W. Va. No records for 7 months each in 1915 and 1922, or for Mar. through June 1933. Missing records from July 1933 through Sept. 1940, Feb. through May 1948, and full years 1959 through 1963 supplied from Moorefield McNeill station, 9 miles NNE of Moorefield, W. Va.																
1963 SELECTED RUNOFF EVENT						MOOREFIELD, WEST VIRGINIA				WATERSHED W-4				66.04		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 6, 1963																
	RG C			RG	C											
2 -6	.00	4/.0061	3-6	0100	.00	.00	3-6	0726	.0105	.0000						
2 -7	.00	.0024		0200	.10	.10		0739	.0135	.0026						
2 -8	.00	.0010		0300	.13	.23		0744	.0223	.0041						
2-12	.44	.0000		0400	.07	.30		0747	.0355	.0055						
2-19	.66	.0000		0630	.04	.39		0750	.0433	.0075						
2-20	.00	.0091		0738	.01	.40		0756	.0816	.0138						
2-21	.00	.0132		0800	.38	.54		0758	.0974	.0167						
2-22	.00	.0407		1030	.02	.60		0800	.1014	.0201						
2-23	.00	.0302						0804	.1145	.0273						
2-25	.00	.0033						0806	.1145	.0311						
2-26	.00	.0021						0810	.1014	.0383						
2-27	.00	.0050						0813	.0974	.0432						
2-28	.00	.0126						0820	.0781	.0535						
3 -1	.60	.0554						0830	.0580	.0648						
3 -2	.02	.0432						0842	.0433	.0749						
3 -3	.00	.0272						0850	.0380	.0804						
3 -4	.60	.1020						0902	.0331	.0875						
3 -5	.30	.3026						0944	.0243	.1076						
3 -6	.00	5/.1174						0958	.0223	.1130						
								1050	.0168	.1299						
								1200	.0135	.1476						
								1330	.0105	.1656						
								1600	.0053	.1855						
								1650	.0053	.1899						
								1930	.0033	.2014						
								2150	.0033	.2091						
								2400	6/.0024	.2153						
Watershed conditions: Dormant. Permanent pasture. Poor cover.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 6.3727. FOR MAP OF WATERSHEDS, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, PP. 66.4-3. 4/ RUNOFF FROM 0726 TO 2400. 5/ RUNOFF FROM 0001 TO 0726. 6/ RUNOFF SLOWLY RECEDES UNTIL NEXT EVENT ON 3-11-63.																



MOOREFIELD, WEST VIRGINIA WATERSHED W-4

MONTHLY PRECIPITATION AND RUNOFF (inches)						MOOREFIELD, WEST VIRGINIA AREA—9.55 ACRES						WATERSHED W-5 66.05	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963 P ^{1/} Q	.70 .70	1.39 .19	6.27 3.55	2.05 T	1.48 .00	4.68 .00	1.29 .00	2.55 .00	1.73 .00	.17 .00	3.86 .00	1.65 .02	27.82 4.46
STA AV ^{2/} P (58-63) Q	1.40 .29	2.51 1.01	3.34 1.54	2.56 .39	3.71 .35	3.42 .08	2.94 .03	2.56 .09	2.51 .03	1.65 .06	1.93 .05	1.85 .10	30.38 4.02
MEAN P ^{3/} 68 YR	2.18	2.04	2.79	2.71	3.40	3.78	3.56	3.37	2.50	2.37	1.79	1.98	32.47

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

ANNUAL MAXIMUM DISCHARGE (cfs) AND ANNUAL MAXIMUM VOLUME OF RUNOFF (cfs) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-19	.15	3-19	.14	3-19	.26	3-19	.70	3-19	.95	3-20	1.14	3-21	1.26	3-20	2.00

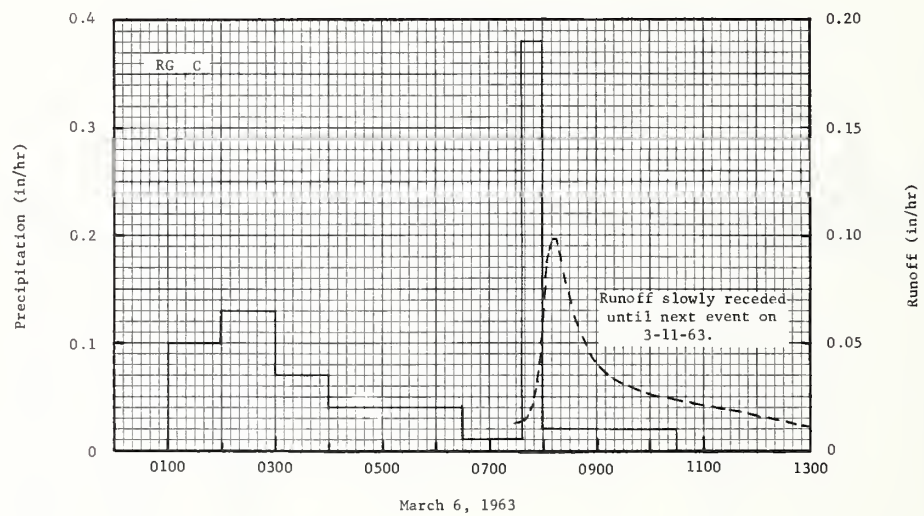
MAXIMUMS FOR PERIOD OF RECORD

19 58 TO 19 63	8-3 1958	.65	8-3 1958	.27	8-3 1958	.31	3-19 1963	.70	3-19 1963	.95	3-20 1963	1.14	2-18 1961	1.39	2-17 1961	2.21
-------------------	-------------	-----	-------------	-----	-------------	-----	--------------	-----	--------------	-----	--------------	------	--------------	------	--------------	------

Notes: Watershed conditions: 100% permanent pasture with controlled grazing. ^{1/} Precipitation data obtained from rain gage C. ^{2/} Precipitation and runoff records began June 1958. ^{3/} Mean P based on 68-yr (1896-1963) U.S. Weather Bureau record period at or near Moorefield, W.Va. No records for 7 months each in 1915 and 1922, or for Mar. through June 1933. Missing records from July 1933 through Sept. 1940, Feb. through May 1948, and full years 1959 through 1963 supplied from Moorefield McNeill station, 9 miles NNE of Moorefield, W. Va.

1963 SELECTED RUNOFF EVENT			MOOREFIELD, WEST VIRGINIA				WATERSHED W-5		66.05	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of March 6, 1963										
	RG C			RG	C					
2-12	.44	.0000	3-6	0100	.00	.00	3-6	0728	.0123	.0000
2-19	.66	.0000		0200	.10	.10		0738	.0135	.0022
2-20	.00	.0439		0300	.13	.23		0742	.0148	.0031
2-21	.00	.0739		0400	.07	.30		0756	.0323	.0086
2-22	.00	.0567		0630	.04	.39		0800	.0517	.0114
2-27	.00	.0004		0738	.01	.40		0806	.0879	.0184
2-28	.00	.0176		0800	.38	.54		0809	.0943	.0229
3 -1	.60	.0816		1030	.02	.60		0812	.0975	.0277
3 -2	.02	.0864						0814	.0975	.0310
3 -3	.00	.0337						0820	.0911	.0404
3 -4	.60	.1284						0840	.0592	.0655
3 -5	.30	.3978						0854	.0448	.0776
3 -6	.00	4/ .1381						0906	.0384	.0859
								0918	.0343	.0932
								0958	.0269	.1136
								1050	.0219	.1347
								1140	.0189	.1517
								1710	.0089	.2283
								2140	.0052	.2601
								2400	5/ .0043	.2711
Watershed conditions: Dormant.										
Permanent pasture. Poor cover.										

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 9.6296. FOR MAP OF WATERSHEDS, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, PP. 66.5-3. ^{4/} RUNOFF FROM 0001 TO 0728. ^{5/} RUNOFF SLOWLY RECEDES UNTIL NEXT EVENT ON 3-11-63.



MOOREFIELD, WEST VIRGINIA WATERSHED W-5

MONTHLY PRECIPITATION AND RUNOFF (inches)						NORTH DANVILLE, VERMONT						WATERSHED W-1				67.01								
						AREA—10,610 ACRES (16.58 SQ. MILES)																		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL											
1963 P <u>1</u> / Q	2.25 .52	2.49 .35	2.79 1.00	2/4.19 8.17	2.70 3.28	1.54 .38	3.46 .21	4.62 .37	1.49 .15	.46 .14	5.39 1.07	1.90 1.29	33.28 16.93											
STA AV <u>3</u> / (58-63) Q	2.40 .95	2.70 .87	2.54 1.18	3.33 7.52	2.66 2.37	3.09 .81	3.54 .47	3.38 .37	2.58 .36	4.63 1.34	3.69 1.73	2.37 1.16	36.91 19.13											
MEAN P <u>4</u> / 68 YR	2.35	2.14	2.47	2.66	2.95	3.49	3.64	3.58	3.48	2.90	2.99	2.47	35.12											
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																								
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																					
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS									
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME								
1963	4-21	.07	4-21	.07	4-22	.13	4-22	.34	4-22	.52	4-22	.75	4-22	1.32	4-23	3.41								
MAXIMUMS FOR PERIOD OF RECORD																								
19 59 TO 19 63	10-24 1959	.10	10-24 1959	.10	10-24 1959	.20	10-24 1959	.50	10-24 1959	.77	10-24 1959	1.14	10-24 1959	1.45	4-12 1960	3.86								
NOTES: Quality of records: P and Q, excellent. Watershed conditions: Predominantly hardwood forest, 64%; cultivated in long hay rotations, with about 1% in row crops, 17%; pasture, largely bluegrass, 15%; idle land in grass and woody plants, 3%; and homesites and roads, 1%. <u>1</u> / Precipitation is an arithmetic average using 17 rain gages. <u>2</u> / Snow water equivalent on Mar. 27 was 12.9 inches and had completely melted by Apr. 30. <u>3</u> / Precipitation records began on some rain gages Oct. 1958. STA AV P values are from arithmetically averaged monthly values. <u>4</u> / Mean P based on 68-yr (1895-1962) U.S. Weather Bureau record period at St. Johnsbury, Vt.																								
1963 DAILY AIR TEMPERATURE (degrees F)						NORTH DANVILLE, VERMONT						WATERSHED W-1				67.01								
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	6	-4	20	-20	27	-8	58	14	48	29	86	40	92	64	73	39	67	44	63	25	48	35	26	6
2	29	6	24	-2	33	20	51	31	48	30	84	44	96	63	66	58	74	41	74	35	44	35	26	6
3	32	20	30	-16	34	14	32	30	66	24	82	42	70	50	79	52	75	50	64	46	34	24	26	15
4	34	24	7	-24	38	18	42	12	77	38	88	54	64	46	74	52	68	38	50	38	46	14	25	18
5	28	16	24	7	36	11	26	10	58	28	86	58	68	46	72	55	65	34	68	28	44	30	28	2
6	31	16	32	18	34	11	40	18	59	22	82	60	67	44	80	54	66	39	78	34	44	37	20	0
7	33	24	25	-12	31	20	43	28	58	27	77	50	68	42	81	56	73	48	84	50	59	43	26	16
8	36	29	2	-24	40	4	38	24	66	37	78	50	68	47	78	54	75	42	63	38	57	49	30	12
9	39	32	22	-7	39	8	38	20	74	48	72	45	64	43	76	46	74	48	48	26	50	42	40	28
10	46	32	31	-3	38	8	32	26	48	26	62	38	65	46	62	44	60	41	62	26	43	39	30	14
11	37	24	30	10	28	11	40	29	42	24	58	32	74	44	63	40	74	34	64	32	40	37	16	-2
12	30	20	30	20	33	19	48	33	52	20	52	48	82	46	66	44	67	40	51	40	40	32	14	-2
13	35	6	24	14	40	30	42	27	64	24	72	46	88	52	56	38	52	32	54	31	40	30	23	10
14	20	-4	24	8	34	22	42	24	66	40	78	39	78	58	58	50	64	28	68	28	38	32	26	8
15	21	-4	13	-4	30	10	48	28	62	32	66	47	73	56	68	48	68	31	75	40	38	28	12	6
16	8	-21	0	-14	42	-5	56	26	76	27	70	40	76	58	62	42	74	34	74	43	40	26	8	2
17	26	-7	18	-23	37	29	54	24	77	33	74	38	82	51	68	38	77	39	67	48	44	24	10	-6
18	30	4	40	18	38	24	58	26	57	44	74	42	86	56	62	45	80	44	75	46	50	40	12	-8
19	33	21	40	34	45	19	46	22	70	48	78	38	82	59	70	38	74	44	76	42	44	34	10	-3
20	37	23	36	23	31	20	65	40	56	36	76	48	86	52	70	49	54	42	76	42	46	29	4	-11
21	33	6	30	2	38	17	61	34	68	34	64	44	80	54	78	50	60	32	58	46	42	38	4	-10
22	10	-8	7	-12	30	21	40	26	64	43	58	43	80	52	78	54	53	40	54	26	54	42	20	-2
23	24	-1	16	-4	31	10	41	24	44	32	75	42	86	54	72	56	48	30	64	34	58	35	12	-8
24	0	-10	26	4	48	1	38	26	63	24	88	46	90	54	61	48	58	24	76	40	34	20	20	10
25	12	-14	24	8	58	27	44	29	72	25	87	46	94	62	60	46	68	26	78	44	26	15	24	11
26	14	-14	12	-15	64	34	42	26	75	30	90	56	92	61	67	37	76	34	75	46	40	16	10	-9
27	25	6	26	-22	48	30	47	28	80	34	88	50	90	60	66	44	65	46	68	44	50	24	6	-17
28	8	-6	26	1	38	20	54	25	70	37	88	58	94	65	68	37	56	34	58	46	34	16	19	-6
29	13	-11	---	---	42	10	68	20	64	52	83	54	90	64	58	53	46	34	48	32	44	33	12	-17
30	24	7	---	---	58	32	48	38	69	50	92	66	68	50	67	52	50	30	40	32	52	12	4	-20
31	18	-14	---	---	44	18	---	---	78	42	---	---	73	40	68	51	---	---	48	34	---	---	18	1
AV.	25	6	23	-1	38	16	46	26	64	34	77	47	80	53	69	47	65	37	64	37	44	30	24	5
MEAN	15.5	11.0	27.0	36.0	49.0	62.0	66.5	58.0	51.0	50.5	37.0	24.5	24	4	27	5	34	15	47	28	64	39	75	47
STA AV	24	4	27	5	34	15	47	28	64	39	75	47	76	52	74	50	67	43	57	36	41	27	24	6
NOTES: TEMPERATURE DATA IS FROM R-12. READINGS TAKEN DAILY FROM HYGROTHERMOGRAPH CHARTS. FOR OTHER TEMPERATURE RECORDS SEE PAGES 67.3-1 AND 67.5-1 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1960-63 RECORDS.																								

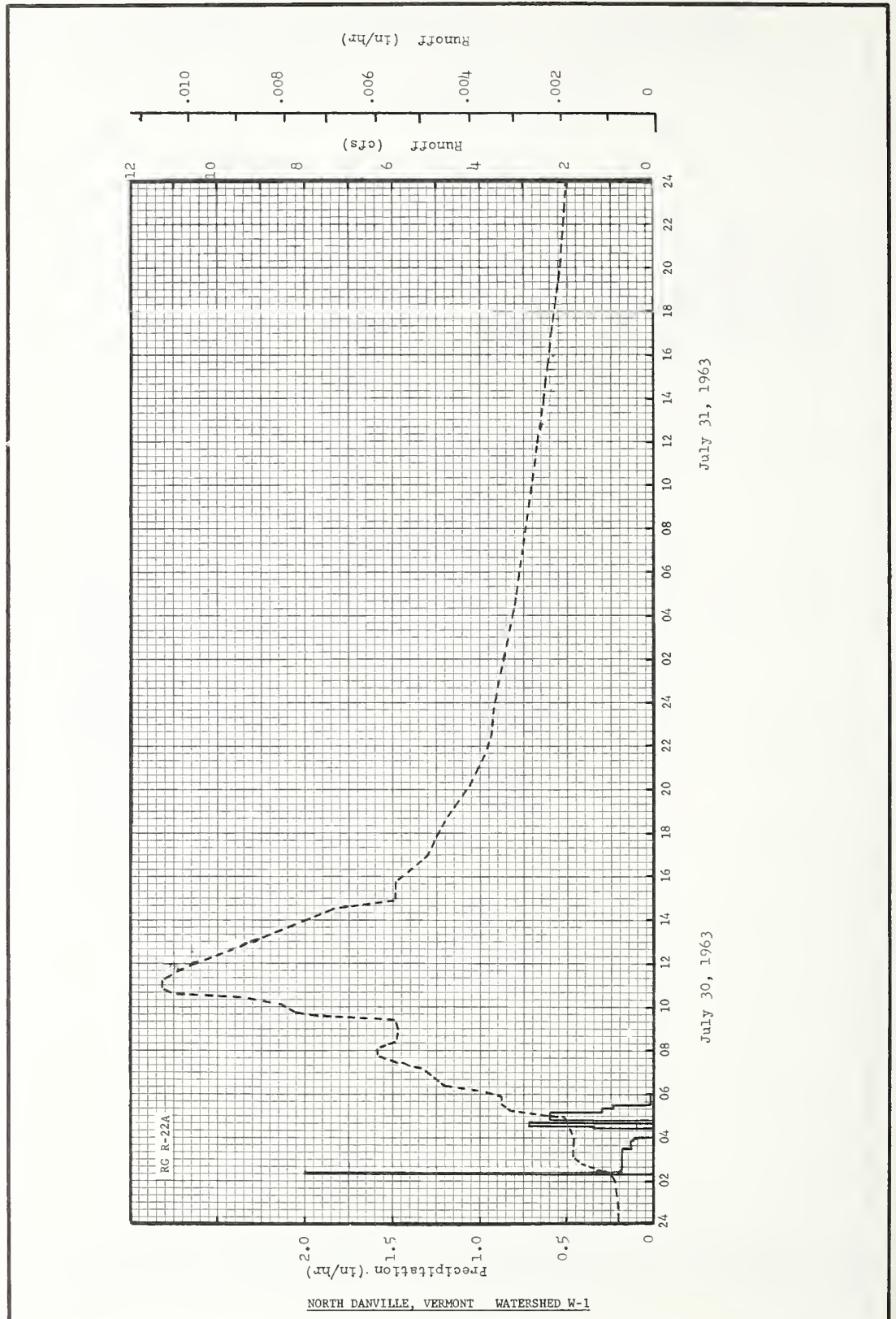
Cooperative Research Project of USDA and the Agricultural Experiment Station and the College of Technology,
University of Vermont, and the Vermont Department of Water Resources

1963 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W-1 67.01						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.08	.00	.15	.00	.00	.12	.00	.00	.52	.02
2	.00	.70	.13	.05	.00	.00	.40	.53	.00	.00	.21	.02
3	.00	.00	.00	1.06	.00	.00	.00	.00	.29	.05	.05	.30
4	.00	.09	.15	.24	.00	.00	.35	.65	.00	.04	.15	.00
5	.00	.16	.00	.05	.20	.00	.00	.00	.00	.00	.05	.00
6	.00	.05	.70	.00	.00	.10	.00	.05	.00	.00	.05	.00
7	.00	.00	.16	.00	.00	.00	.37	.00	.00	.00	.30	.00
8	.00	.00	.09	.00	.31	.00	.50	.00	.00	.00	.42	.00
9	.00	.00	.00	.00	.00	.07	.00	.05	.00	.00	.43	.59
10	.00	.00	.31	.10	.55	.00	.00	.00	.00	.00	.15	.08
11	.08	.00	.00	.00	.37	.15	.00	.15	.00	.15	.34	.03
12	.22	.40	.26	.00	.00	.05	.00	.00	.29	.00	.11	.25
13	.20	.03	.24	.00	.00	.00	.00	.88	.00	.00	.00	.03
14	.00	.00	.00	.00	.04	.00	.14	.52	.00	.00	.00	.04
15	.00	.05	.00	.00	.00	.00	.06	.13	.00	.00	.00	.03
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00
17	.00	.00	.26	.00	.00	.14	.00	.00	.00	.00	.00	.00
18	.00	.00	.03	.40	.21	.00	.15	.17	.00	.00	.00	.05
19	.00	.17	.00	.20	.00	.00	.23	.00	.03	.01	.38	.00
20	.16	.20	.27	.15	.30	.02	.00	.00	.00	.00	.00	.03
21	.00	.34	.00	.60	.00	.53	.87	.00	.00	.00	.07	.00
22	.00	.00	.00	.00	.02	.05	.00	.00	.02	.00	.02	.00
23	.60	.00	.00	.09	.09	.00	.00	.85	.00	.00	.50	.02
24	.03	.20	.00	.31	.00	.00	.00	.09	.00	.00	.00	.15
25	.00	.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.55	.00	.00	.00	.00	.10	.00	.00	.08	.00	.00	.03
28	.01	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.17	.69	.00	.77	.00
30	.00	-----	.00	.56	.00	.00	.90	.33	.00	.00	.44	.00
31	.00	-----	.00	-----	.14	-----	.00	.07	-----	.02	-----	.00
TOTAL	1.85	2.57	2.68	3.81	2.38	1.21	3.97	4.76	1.42	.27	5.03	1.71
ST. AV.	2.27	2.56	1.42	3.10	2.40	2.60	3.45	3.35	2.45	4.27	3.65	2.33
NOTES: PRECIPITATION VALUES ARE FOR R-22A. ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. FOR OTHER PRECIPITATION RECORDS SEE PAGES 67.3-2 AND 67.5-2 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1959-63 RECORDS.												
1963 MEAN DAILY DISCHARGE (cfs)						NORTH DANVILLE, VERMONT WATERSHED W-1 67.01						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	11.13	5.78	4.92	70.72	181.12	9.84	2.25	1.93	4.17	2.78	4.07	26.32
2	9.09	5.78	4.81	101.96	86.44	8.56	2.03	2.89	3.00	2.35	5.56	13.69
3	8.34	5.78	4.81	241.78	66.54	7.38	3.00	5.24	2.46	2.25	5.24	13.91
4	7.81	5.78	4.92	171.82	64.19	7.17	2.57	6.53	4.28	2.57	3.85	13.48
5	7.49	5.78	5.03	92.54	83.98	6.74	3.64	8.13	3.21	2.35	4.07	9.74
6	7.49	5.78	5.24	68.15	54.56	6.10	2.78	3.74	2.46	2.14	5.67	12.20
7	7.81	5.78	5.46	82.16	43.01	6.21	2.67	2.78	2.25	2.03	17.65	17.01
8	7.92	5.78	5.24	80.02	45.36	5.03	9.09	2.46	1.93	1.93	19.36	15.83
9	7.92	5.78	5.35	63.23	66.44	5.14	8.45	2.14	1.82	1.82	40.55	42.58
10	7.92	5.46	5.56	54.56	43.65	4.71	4.07	2.25	1.93	1.71	17.55	31.88
11	8.24	5.46	5.56	52.96	85.05	4.39	3.20	2.03	1.71	1.82	21.61	15.62
12	8.34	5.67	5.46	95.32	90.29	5.99	2.89	2.14	1.82	2.35	21.61	11.55
13	8.56	5.99	5.78	102.06	70.93	5.67	2.46	5.46	2.67	2.25	14.12	14.44
14	8.56	5.99	5.56	95.32	49.21	4.39	2.46	27.28	2.25	2.14	10.27	10.81
15	8.34	5.88	5.35	100.46	40.55	4.07	2.57	14.66	1.93	2.03	8.02	9.74
16	7.60	5.46	5.46	135.33	32.31	3.85	2.57	8.13	1.82	1.93	7.81	8.67
17	7.27	5.46	5.78	129.45	27.49	4.71	2.14	4.49	1.60	1.82	8.56	8.88
18	6.74	5.46	6.53	236.86	29.31	7.06	2.35	4.28	1.50	1.82	10.59	13.27
19	6.74	5.56	6.10	135.98	37.87	4.17	3.32	3.85	1.50	1.82	23.43	17.44
20	7.27	5.78	6.31	263.72	36.80	3.64	2.35	3.00	1.71	1.82	11.88	21.40
21	7.38	5.56	6.21	270.03	40.65	17.76	3.64	2.67	1.60	1.71	9.41	27.17
22	7.27	5.46	6.42	235.04	30.70	8.02	3.42	2.46	1.50	1.71	9.41	29.85
23	7.06	5.46	5.99	112.12	26.21	5.67	2.25	7.17	1.50	1.71	16.05	31.99
24	6.95	5.46	6.31	110.84	24.18	4.28	1.71	10.27	1.50	1.71	35.30	37.34
25	6.42	5.46	8.02	92.86	19.15	3.42	1.50	4.71	1.50	1.71	13.69	33.17
26	5.99	5.46	14.44	78.85	17.22	2.89	1.39	3.32	1.50	1.71	9.84	21.93
27	6.42	5.35	31.03	71.04	15.51	2.57	1.39	2.78	1.50	1.71	9.52	15.94
28	6.10	5.14	79.38	75.21	13.59	2.89	1.18	2.57	1.60	1.71	8.13	15.30
29	5.99	-----	65.05	81.09	13.05	2.57	1.07	2.57	3.74	1.71	13.16	12.95
30	5.99	-----	48.78	140.58	13.80	2.35	5.14	3.00	4.81	1.71	89.76	11.23
31	5.88	-----	64.19	-----	12.09	-----	2.78	7.92	-----	1.60	-----	8.88
MEAN	7.48	5.62	14.35	121.40	47.14	5.57	2.98	5.25	2.23	1.94	15.87	18.52
INCHES	.520	.353	.998	8.170	3.278	.375	.207	.365	.150	.135	1.068	1.288
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/OAY, MULTIPLY BY 0.0022433. RECORDS ARE EXCELLENT. SOME PERIODS OF WINTER RECORDS ADJUSTED DUE TO ICE JAMS AT THE WEIR.												

1963			SELECTED RUNOFF EVENT				NORTH DANVILLE, VERMONT		WATERSHED W-1		67.01	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)		
			Event of July 30-31, 1963									
7-30	.00	1/.0002	7-30	RG	R-22A		7-30	0224	1.07	.0000		
				0220	.00	.00		0238	1.39	.0000		
				0225	2.00	.10		0255	1.71	.0001		
				0331	.18	.30		0307	1.82	.0001		
				0355	.13	.35		0400	1.82	.0003		
				0400	.12	.36						
				0425	.00	.36		0445	1.93	.0004		
				0430	.36	.39		0452	2.03	.0004		
				0438	.72	.45		0457	2.25	.0004		
				0440	.00	.45		0504	2.67	.0005		
				0455	.60	.60		0515	3.32	.0005		
				0510	.60	.75		0530	3.53	.0006		
				0520	.30	.80		0552	3.53	.0007		
				0530	.24	.80		0608	3.96	.0008		
				0600	.02	.85		0627	4.81	.0009		
								0645	5.03	.0011		
								0707	5.24	.0013		
								0728	5.78	.0014		
								0745	6.31	.0016		
								0806	6.31	.0018		
								0822	5.99	.0020		
								0921	5.99	.0025		
								0935	7.49	.0027		
								0945	8.24	.0028		
								1008	8.56	.0031		
								1022	9.31	.0033		
								1035	10.81	.0035		
								1045	11.23	.0036		
								1115	11.23	.0042		
								1145	10.81	.0047		
								1300	9.31	.0059		
								1422	7.49	.0070		
								1453	5.99	.0073		
								1545	5.99	.0078		
								1654	5.24	.0084		
								1745	5.03	.0088		
								1830	4.81	.0090		
								2000	4.28	.0098		
								2130	3.96	.0104		
								2230	3.74	.0107		
								2300	3.74	.0109		
								2400	3.64	.0113		
								0430	3.21	.0127		
								1200	2.67	.0148		
								1345	2.57	.0153		
								2100	2.14	.0167		
								2400	3/2.03	.0175		
			OTHER	RAIN	GAGE	TOTALS						
			R-2	.95	R-15	.98						
			R-3	.96	R-16	.83						
			R-5	.80	R-19	.87						
			R-6	.90	R-20	.81						
			R-8	.77	R-20A	.81						
			R-10	.95	R-21	.99						
			R-12	.86	AVG 4/	.89						

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000935. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 67.1-4. FOR ISOHYETAL MAP OF ABOVE STORM, SEE P. 67.5-4. 1/ RUNOFF PRIOR TO 0220 ON 7-30-63. FOR 30-DAY ANTECEDENT RAINFALL AND RUNOFF, SEE PREVIOUS PAGE. 2/ RAINFALL INTENSITY DATA FOR R-21 NOT AVAILABLE. 3/ BEGINNING OF NEXT EVENT. 4/ ARITHMETIC AVERAGE OF 16 RAIN GAGES.

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000935. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 67.1-4. FOR ISOHYETAL MAP OF ABOVE STORM, SEE P. 67.5-4. 1/ RUNOFF PRIOR TO 0220 ON 7-30-63. FOR 30-DAY ANTECEDENT RAINFALL AND RUNOFF, SEE PREVIOUS PAGE. 2/ RAINFALL INTENSITY DATA FOR R-21 NOT AVAILABLE. 3/ BEGINNING OF NEXT EVENT. 4/ ARITHMETIC AVERAGE OF 16 RAIN GAGES.



MONTHLY PRECIPITATION AND RUNOFF (inches)							NORTH DANVILLE, VERMONT AREA—146 ACRES							WATERSHED W-2 67.02	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963 P 1/ Q	2.02 1.40	2.48 .92	2.90 1.43	2/3.91 6.28	2.36 3.56	1.18 1.40	4.24 .44	4.51 .45	1.33 .18	.26 .17	5.02 .71	1.69 .58	31.90 17.52		
STA AV 3/ (58-63) Q	2.22 .99	2.62 .77	2.09 1.44	3.13 4.52	2.37 2.20	2.59 .98	3.53 .50	3.47 .40	2.47 .32	4.30 .75	3.43 1.23	2.17 1.42	34.39 15.52		
MEAN P 4/ 68 YR	2.35	2.14	2.47	2.66	2.95	3.49	3.64	3.58	3.48	2.90	2.99	2.47	35.12		

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-23	.02	8-23	.02	4-22	.03	4-22	.08	4-22	.15	4-4	.28	4-22	.53	4-23	1.94

MAXIMUMS FOR PERIOD OF RECORD

19 59 to 1963	3-30 1962	.05	3-30 1962	.05	3-30 1962	.10	3-30 1962	.27	3-30 1962	.44	3-30 1962	.63	3-30 1962	1.14	3-28 1962	2.54
------------------	--------------	-----	--------------	-----	--------------	-----	--------------	-----	--------------	-----	--------------	-----	--------------	------	--------------	------

NOTES: Quality of records: P and Q, excellent. Watershed conditions: Pasture of mostly bluegrass, 38%; cultivated land entirely in clover and orchard grass hay, 37%; and forest stand, predominantly hardwoods, 25%. 1/ Average watershed precipitation from Thiessen weighted average of R-22 and R-22A. 2/ Snow water equivalent on March 26 was 6.0 inches and had completely melted by April 9. 3/ Precipitation records began in Sept. 1958; runoff records began in Oct. 1958. 4/ Mean P based on 68-yr (1895-1962) U.S. Weather Bureau record period at St. Johnsbury, Vt.

1963 DAILY AIR TEMPERATURE (degrees F)												NORTH DANVILLE, VERMONT WATERSHED W-2 67.02												
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1																								
2	6	-4	20	-20	27	-8	58	14	48	29	86	40	92	64	73	39	67	44	63	25	48	35	26	6
3	29	6	24	-2	33	20	51	31	48	30	84	44	96	63	66	58	74	41	74	35	44	35	26	6
4	32	20	30	-16	34	14	32	30	66	24	82	42	70	50	79	52	75	50	64	46	34	24	26	15
5	34	24	7	-24	38	18	42	12	77	38	88	54	64	46	74	52	68	38	50	38	46	14	25	18
6	28	16	24	7	36	11	26	10	58	28	86	58	68	46	72	55	65	34	68	28	44	30	28	2
7	31	16	32	18	34	11	40	18	59	22	82	60	67	44	80	54	66	39	78	34	44	37	20	0
8	33	24	25	-12	31	20	43	28	58	27	77	50	68	42	81	56	73	48	84	50	59	43	26	16
9	36	29	2	-24	40	4	38	24	66	37	78	50	68	47	78	54	75	42	63	38	57	49	30	12
10	39	32	22	-7	39	8	38	20	74	48	72	45	64	43	76	46	74	48	48	26	50	42	40	28
11	46	32	31	-3	38	8	32	26	48	26	62	38	65	46	62	44	60	41	62	26	43	39	30	14
12	37	24	30	10	28	11	40	29	42	24	58	32	74	44	63	40	74	34	64	32	40	37	16	-2
13	30	20	30	20	33	19	48	33	52	20	52	48	82	46	66	44	67	40	51	40	40	32	14	-2
14	35	6	24	14	40	30	42	27	64	24	72	46	88	52	56	38	52	32	54	31	40	30	23	10
15	20	-4	24	8	34	22	42	24	66	40	78	39	78	58	58	50	64	28	68	28	38	32	26	8
16	21	-4	13	-4	30	10	48	28	62	32	66	47	73	56	68	48	68	31	75	40	38	28	12	6
17	8	-21	0	-14	42	-5	56	26	76	27	70	40	76	58	62	42	74	34	74	43	40	26	8	2
18	26	-7	18	-23	37	29	54	24	77	33	74	38	82	51	68	38	77	39	67	48	44	24	10	-6
19	30	4	40	18	38	24	58	26	57	44	74	42	86	56	62	45	80	44	75	46	50	40	12	-8
20	33	21	40	34	45	19	46	22	70	48	78	38	82	59	70	38	74	44	76	42	44	34	10	-3
21	37	23	36	23	31	20	65	40	56	36	76	48	86	52	70	49	54	42	76	42	46	29	4	-11
22	33	6	30	2	38	17	61	34	68	34	64	44	80	54	78	50	60	32	58	46	42	38	4	-10
23	10	-8	7	-12	30	21	40	26	64	43	58	43	80	52	78	54	53	40	54	26	54	42	20	-2
24	24	-1	16	-4	31	10	41	24	44	32	75	42	86	54	72	56	48	30	64	34	58	35	12	-8
25	0	-10	26	4	48	1	38	26	63	24	88	46	90	54	61	48	58	24	76	40	34	20	20	10
26	12	-14	24	8	58	27	44	29	72	25	87	46	94	62	60	46	68	26	78	44	26	15	24	11
27	14	-14	12	-15	64	34	42	26	75	30	90	56	92	61	67	37	76	34	75	46	40	16	10	-9
28	25	6	26	-22	48	28	47	28	80	34	88	50	90	60	66	44	65	46	68	44	50	24	6	-17
29	8	-6	26	1	38	20	54	25	70	37	88	58	94	65	68	37	56	34	58	46	34	16	12	-8
30	13	-11	42	10	68	20	64	52	83	54	90	64	90	64	58	53	46	34	48	32	44	33	19	-6
31	24	7	---	---	58	32	48	38	69	50	92	66	68	50	67	52	50	30	40	32	52	12	12	-17
31	18	-14	---	---	44	18	---	---	78	42	---	---	73	40	68	51	---	---	48	34	---	---	4	-20
AV.	25	6	23	-1	38	16	46	26	64	34	77	47	80	53	69	47	65	37	64	37	44	30	18	1
MEAN	15.5		11.0		27.0		36.0		49.0		62.0		66.5		58.0		51.0		50.5		37.0		24.5	
STA AV	24	4	27	5	34	15	47	28	64	39	75	47	76	52	74	50	67	43	57	36	41	27	24	6

NOTES: TEMPERATURE DATA FROM R-12, READINGS TAKEN DAILY FROM HYGROTHERMOGRAPH CHARTS. STA AV (STATION AVERAGE) BASED ON 1960-63 RECORDS.

1963 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W-2 67.02						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.08	.00	.15	.00	.00	.12	.00	.00	.52	.02
2	.00	.70	.13	.05	.00	.00	.40	.53	.00	.00	.21	.02
3	.00	.00	.00	1.06	.00	.00	.00	.00	.29	.05	.05	.30
4	.00	.09	.15	.24	.00	.00	.35	.65	.00	.04	.15	.00
5	.00	.16	.00	.05	.20	.00	.00	.00	.00	.00	.05	.00
6	.00	.05	.70	.00	.00	.10	.00	.05	.00	.00	.05	.00
7	.00	.00	.16	.00	.00	.00	.37	.00	.00	.00	.30	.00
8	.00	.00	.09	.00	.31	.00	.50	.00	.00	.00	.42	.00
9	.00	.00	.00	.00	.00	.07	.00	.05	.00	.00	.43	.59
10	.00	.00	.31	.10	.55	.00	.00	.00	.00	.00	.15	.08
11	.08	.00	.00	.00	.37	.15	.00	.15	.00	.15	.34	.03
12	.22	.40	.26	.00	.00	.05	.00	.00	.29	.00	.11	.25
13	.20	.03	.24	.00	.00	.00	.00	.88	.00	.00	.00	.03
14	.00	.00	.00	.00	.04	.00	.14	.52	.00	.00	.00	.04
15	.00	.05	.00	.00	.00	.00	.06	.13	.00	.00	.00	.03
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00
17	.00	.00	.26	.00	.00	.14	.00	.00	.00	.00	.00	.00
18	.00	.00	.03	.40	.21	.00	.15	.17	.00	.00	.00	.05
19	.00	.17	.00	.20	.00	.00	.23	.00	.03	.01	.38	.00
20	.16	.20	.27	.15	.30	.02	.00	.00	.00	.00	.00	.03
21	.00	.34	.00	.60	.00	.53	.87	.00	.00	.00	.07	.00
22	.00	.00	.00	.00	.02	.05	.00	.00	.02	.00	.02	.00
23	.60	.00	.00	.09	.09	.00	.00	.85	.00	.00	.50	.02
24	.03	.20	.00	.31	.00	.00	.00	.09	.00	.00	.00	.15
25	.00	.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.55	.00	.00	.00	.00	.10	.00	.00	.08	.00	.00	.03
28	.01	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.17	.69	.00	.77	.00
30	.00	-----	.00	.56	.00	.00	.90	.33	.00	.00	.44	.00
31	.00	-----	.00	-----	.14	-----	.00	.07	-----	.02	-----	.00
TOTAL	1.85	2.57	2.68	3.81	2.38	1.21	3.97	4.76	1.42	.27	5.03	1.71
STA AV	2.27	2.56	1.42	3.10	2.40	2.60	3.45	3.35	2.45	4.27	3.65	2.33

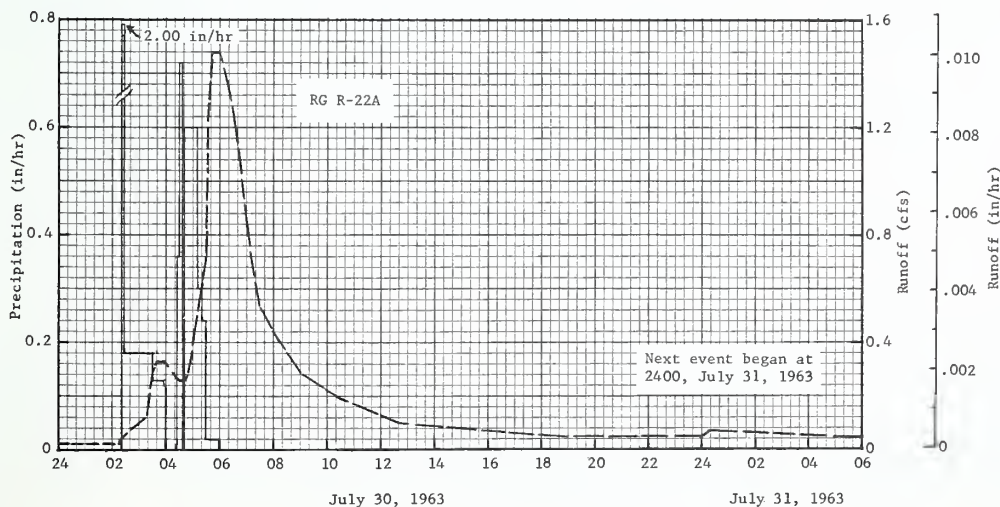
NOTES: PRECIPITATION VALUES ARE FOR R-22A. ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. STA AV (STATION AVERAGE) BASED ON 1959-63 RECORDS.

1963 MEAN DAILY DISCHARGE (cfs)						NORTH DANVILLE, VERMONT WATERSHED W-2 67.02						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.30	.19	.17	.82	1.30	.42	.05	.04	.04	.06	.13	.13
2	.33	.19	.17	1.02	.96	.38	.07	.16	.03	.04	.13	.11
3	.36	.19	.17	1.62	.78	.33	.07	.12	.03	.05	.11	.10
4	.39	.19	.17	1.55	.71	.31	.07	.22	.07	.04	.08	.10
5	.37	.19	.17	1.22	.82	.31	.09	.10	.03	.04	.06	.10
6	.36	.19	.17	1.04	.70	.32	.07	.06	.03	.04	.05	.11
7	.34	.19	.19	1.36	.62	.33	.09	.04	.03	.04	.15	.10
8	.27	.19	.17	1.59	.68	.31	.31	.05	.03	.03	.17	.10
9	.23	.23	.16	1.34	.82	.32	.16	.03	.02	.03	.41	.38
10	.26	.26	.14	1.32	.72	.30	.10	.03	.02	.03	.19	.18
11	.29	.25	.15	1.19	1.05	.28	.08	.04	.01	.04	.24	.26
12	.29	.22	.19	1.30	.95	.37	.06	.04	.03	.04	.19	.33
13	.29	.22	.19	1.34	.77	.25	.05	.23	.04	.02	.13	.11
14	.31	.22	.19	1.31	.66	.19	.06	.32	.03	.03	.10	.13
15	.35	.22	.19	1.40	.61	.20	.08	.11	.02	.03	.09	.10
16	.30	.22	.18	1.40	.57	.22	.06	.07	.02	.03	.09	.09
17	.28	.22	.19	1.34	.60	.46	.04	.05	.02	.02	.08	.08
18	.26	.19	.22	1.52	.65	.43	.08	.06	.01	.03	.15	.08
19	.26	.19	.21	1.40	.73	.28	.13	.05	.02	.04	.13	.08
20	.26	.19	.19	1.67	.69	.20	.06	.04	.02	.04	.09	.08
21	.26	.19	.18	1.48	.75	.92	.32	.03	.02	.03	.10	.10
22	.26	.19	.20	1.66	.62	.44	.12	.03	.02	.03	.10	.10
23	.23	.18	.22	1.28	.62	.33	.07	.28	.03	.02	.19	.06
24	.22	.17	.22	1.32	.61	.18	.05	.14	.02	.02	.14	.07
25	.22	.17	.25	1.17	.60	.12	.03	.07	.01	.03	.08	.09
26	.22	.18	.32	1.07	.57	.08	.02	.05	.01	.03	.08	.08
27	.20	.19	.82	.92	.56	.07	.02	.04	.01	.03	.11	.06
28	.22	.18	1.32	.90	.56	.07	.01	.03	.03	.02	.08	.08
29	.22	-----	.49	.89	.49	.06	.02	.06	.26	.02	.28	.06
30	.22	-----	.58	1.07	.55	.07	.22	.06	.15	.02	.49	.05
31	.20	-----	.58	-----	.52	-----	.04	.11	-----	.02	-----	.05
MEAN	.28	.20	.31	1.28	.70	.29	.09	.09	.04	.03	.15	.11
INCHES	1.401	.920	1.434	6.280	3.561	1.397	.441	.447	.183	.166	.717	.578

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.1630258. RECORDS ARE EXCELLENT. SOME PERIODS OF WINTER RECORDS ARE ADJUSTED DUE TO ICE JAMS AT THE WEIR.

1963 SELECTED RUNOFF EVENT			NORTH DANVILLE, VERMONT				WATERSHED W-2 67.02			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of July 30-31, 1963										
7-30	.00	<u>1</u> /.0003	7-30	RG	R-22A		7-30	0215	.02	.0000
				0220	.00	.00		0220	.04	.0000
				0225	2.00	.10		0245	.08	.0002
				0331	.18	.30		0300	.10	.0004
				0355	.13	.35		0315	.12	.0006
				0400	.12	.36				
				0425	.00	.36		0330	.29	.0009
				0430	.36	.39		0340	.33	.0013
				0438	.72	.45		0358	.33	.0019
				0440	.00	.45		0430	.26	.0030
				0455	.60	.60		0445	.26	.0034
				0510	.60	.75		0455	.33	.0038
				0520	.30	.80		0530	.73	.0051
				0530	.24	.80		0535	1.24	.0070
				0600	.02	.85		0545	1.48	.0086
								0600	1.48	.0111
				OTHER	GAGE	TOTAL		0630	1.24	.0157
				RG	R-22	.80		0700	.84	.0192
				2RG	AVG <u>2</u>	.83		0730	.53	.0216
			0800	.44	.0232					
			0900	.29	.0257					
			1030	.19	.0282					
			1245	.10	.0305					
			1600	.07	.0323					
			1900	.05	.0336					
			2400	.05	.0354					
			7-31	0015	.07	.0355				
				0500	.05	.0375				
				0715	.05	.0384				
				1200	.03	.0398				
				2100	.01	.0411				
				2400	<u>3</u> /.01	.0414				

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.006793. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, PP. 67.2-4. 1/ RUNOFF PRIOR TO 0215 ON 7-30-63. FOR 30-DAY ANTECEDENT RAINFALL AND RUNOFF SEE TABLES ON PREVIOUS PAGE. 2/ THIESSEN WEIGHTED USING 2 RAIN GAGES. 3/ BEGINNING OF NEXT EVENT.



NORTH DANVILLE, VERMONT WATERSHED W-2

MONTHLY PRECIPITATION AND RUNOFF (inches)						NORTH DANVILLE, VERMONT AREA—2,067 ACRES (3.23 SQ. MILES)								67.03		
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P <u>1/</u>	2.24	2.94	3.23	2/4.59	3.20	1.92	3.08	5.35	1.71	.56	5.73	1.98	36.53			
Q	.77	.51	.96	7.69	4.21	1.05	.66	.70	.41	.39	1.27	1.19	19.81			
STA AV <u>3/</u> P	2.14	3.01	2.34	4.46	3.14	3.56	4.11	3.35	3.02	3.53	3.65	2.27	38.58			
(60-63) Q	.98	.92	1.13	7.06	3.40	1.47	.86	.64	.56	1.23	1.47	1.05	20.77			
MEAN P <u>4/</u> 68 YR	2.35	2.14	2.47	2.66	2.95	3.49	3.64	3.58	3.48	2.90	2.99	2.47	35.12			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-21	.07	4-21	.07	4-21	.13	4-21	.31	4-22	.47	4-22	.70	4-22	1.21	4-24	3.30
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1963	4-21	.07	4-21	.07	4-21	.13	4-21	.31	4-18	.56	4-18	.86	4-17	1.40	4-17	3.79
1963	1963		1963		1963		1963		1960		1960		1960		1960	
NOTES: Quality of records: P and Q excellent. Watershed conditions: Forest, predominantly hardwoods, 67% pasture of mostly bluegrass, 19%; cultivated land consisting of clover, orchard grass, and timothy hay with very small areas in row crops, 11%; and idle land in tall grasses and woody plants, 3%. <u>1/</u> Thiessen weighted values using 6 rain gages. <u>2/</u> Snow water equivalent on Apr. 12 was 8.5 inches, snow had completely melted by Apr. 22. <u>3/</u> Records of P and Q began Jan. 1, 1960. STA AV P values are averages of Thiessen weighted monthly values. <u>4/</u> Mean P based on 68-yr (1895-1962) U.S. Weather Bureau record period at St. Johnsbury, Vt.																

1963 DAILY AIR TEMPERATURE (degrees F)										NORTH DANVILLE, VERMONT WATERSHED W-3 67.03															
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
1	8	-5	20	-8	24	-2	55	24	46	30	80	44	88	65	73	46	66	44	62	27	42	30	16	6	
2	24	8	25	10	28	18	50	38	48	31	84	48	89	62	66	58	70	45	74	40	40	30	24	6	
3	24	18	25	14	27	14	38	36	63	30	80	46	68	49	75	56	73	48	66	44	30	24	25	15	
4	25	19	6	-24	33	16	42	23	72	38	82	56	64	46	70	56	63	38	50	34	42	30	21	16	
5	21	10	20	7	34	14	32	20	57	32	80	57	68	49	69	56	64	36	66	34	46	32	25	5	
6	23	10	26	16	27	14	44	28	58	30	78	58	66	46	74	55	67	38	75	38	43	36	22	5	
7	25	19	21	-10	26	18	45	34	57	32	76	48	66	46	75	53	71	47	80	50	53	40	28	16	
8	27	22	2	-20	30	6	44	20	64	42	74	46	66	46	74	54	72	45	61	36	52	46	35	16	
9	26	24	16	-10	32	6	30	18	72	47	70	43	63	44	74	50	72	48	49	24	46	40	37	26	
10	32	24	24	5	28	12	34	20	47	32	64	33	64	48	62	45	60	40	62	28	40	38	27	12	
11	34	25	26	7	23	10	38	32	39	28	58	39	69	48	63	42	70	38	60	36	38	34	14	-4	
12	26	22	24	18	27	17	44	31	52	28	52	48	80	50	68	44	63	38	50	35	42	34	12	-2	
13	28	5	18	12	32	25	41	27	64	34	72	46	82	54	58	43	54	34	52	31	38	32	20	8	
14	18	0	18	8	28	15	41	24	64	42	74	44	76	56	60	47	64	31	66	32	36	26	24	6	
15	19	0	12	-4	25	4	46	30	62	37	64	49	68	56	66	46	69	34	72	43	35	26	10	2	
16	15	-8	0	-12	32	0	54	34	70	36	65	44	74	55	62	42	74	36	72	44	36	26	6	-1	
17	25	0	14	-14	30	25	52	35	73	40	71	44	78	52	66	40	76	45	66	45	40	26	6	-6	
18	30	14	32	12	31	20	54	29	58	46	70	45	80	57	59	43	79	48	73	44	54	40	12	-3	
19	25	17	37	30	38	16	44	26	66	44	75	40	78	60	68	43	72	48	76	46	45	35	8	-6	
20	28	21	29	18	28	21	58	40	56	38	70	53	82	57	69	48	54	38	76	46	46	29	1	-13	
21	25	2	25	2	36	17	54	34	67	38	62	45	78	56	76	50	56	36	57	33	44	36	4	-13	
22	10	-7	8	-8	29	19	38	26	61	41	56	44	79	53	78	54	50	38	52	27	52	42	16	-2	
23	22	0	14	-2	28	11	39	27	42	33	74	43	81	56	74	56	48	30	67	31	54	34	16	-5	
24	1	-6	24	4	42	10	39	26	60	30	84	55	86	58	62	46	58	30	76	45	34	20	23	14	
25	10	-13	20	4	53	29	41	30	68	34	84	53	90	65	60	45	69	31	76	46	24	16	22	9	
26	12	-8	12	-6	57	35	41	29	72	38	85	58	87	61	68	42	72	38	70	50	41	20	10	-6	
27	20	8	20	-10	45	30	46	31	76	40	83	54	86	60	64	44	60	46	64	46	47	33	12	-10	
28	8	-3	22	5	37	24	54	30	70	42	85	58	88	62	69	40	54	34	58	43	34	20	13	-4	
29	14	-5	---	---	42	18	66	29	62	51	80	56	86	63	56	50	44	36	46	30	45	40	19	-2	
30	18	7	---	---	52	34	47	39	68	51	86	60	69	46	67	50	49	28	36	30	52	12	10	-14	
31	15	-6	---	---	43	26	---	---	73	48	---	---	72	42	66	49	---	---	44	30	---	---	---	12	-15
AV.	21	8	19	-5	34	16	45	37	62	38	74	49	76	54	67	48	64	38	63	38	42	30	17	2	
MEAN	14.5	7.0	25.0	41.0	50.0	61.5	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	9.5	
STA AV	21	2	22	1	34	14	44	23	59	37	71	48	72	52	69	50	65	43	57	37	39	26	22	8	
NOTES: TEMPERATURE DATA IS FROM R-3. READINGS TAKEN DAILY FROM HYGROTHERMOGRAPH CHARTS. FOR OTHER TEMPERATURE RECORDS SEE PAGE 67.5-1 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1960-63 RECORDS.																									

1963 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W-3 67.03						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.13	.00	.28	.00	.00	.12	.00	.00	.54	.00
2	.00	.80	.12	.15	.00	.00	.15	.68	.00	.00	.18	.00
3	.00	.05	.00	.99	.00	.00	.00	.00	.40	.13	.00	.25
4	.00	.00	.17	.34	.00	.00	.27	1.00	.00	.08	.45	.00
5	.00	.30	.00	.02	.31	.00	.11	.08	.00	.00	.04	.00
6	.00	.08	.72	.00	.00	.13	.00	.00	.00	.00	.10	.00
7	.00	.06	.18	.00	.00	.00	.32	.00	.00	.00	.30	.00
8	.00	.00	.00	.00	.45	.00	.78	.00	.00	.06	.50	.00
9	.00	.00	.00	.00	.01	.02	.00	.24	.00	.00	.35	.71
10	.00	.00	.30	.17	.64	.00	.00	.01	.00	.00	.18	.10
11	.12	.00	.03	.08	.40	.12	.00	.13	.00	.25	.47	.03
12	.21	.45	.20	.00	.00	.03	.00	.00	.35	.00	.13	.25
13	.35	.10	.23	.00	.00	.00	.00	.98	.00	.00	.10	.02
14	.00	.00	.02	.00	.08	.00	.00	.65	.00	.00	.01	.05
15	.00	.05	.00	.00	.00	.00	.10	.30	.00	.00	.00	.05
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00
17	.00	.00	.22	.00	.00	.55	.00	.00	.00	.00	.00	.00
18	.00	.00	.08	.47	.28	.00	.19	.16	.00	.00	.51	.04
19	.00	.20	.00	.20	.00	.00	.07	.00	.10	.00	.03	.01
20	.26	.12	.32	.13	.34	.15	.00	.00	.00	.00	.00	.00
21	.05	.21	.00	.75	.00	.75	.05	.00	.00	.00	.10	.00
22	.00	.00	.00	.02	.08	.02	.00	.00	.04	.00	.03	.04
23	.63	.00	.00	.00	.17	.00	.00	.15	.00	.00	.67	.02
24	.03	.18	.00	.50	.00	.00	.00	.04	.00	.00	.00	.17
25	.00	.03	.00	.04	.00	.00	.00	.00	.00	.00	.00	.05
26	.04	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00
27	.65	.00	.05	.00	.00	.08	.00	.00	.09	.00	.00	.10
28	.05	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.02
29	.00	-----	.00	.00	.00	.00	.08	.15	.66	.00	.75	.03
30	.00	-----	.00	.55	.11	.00	.88	.62	.00	.00	.40	.00
31	.00	-----	.00	-----	-----	-----	.00	.07	-----	.02	-----	.00
TOTAL	2.39	2.63	2.77	4.42	3.15	1.85	3.00	5.38	1.67	.54	5.98	1.94
STA AV	2.60	2.84	2.48	3.55	3.12	3.71	3.39	3.79	2.91	4.75	4.10	2.74

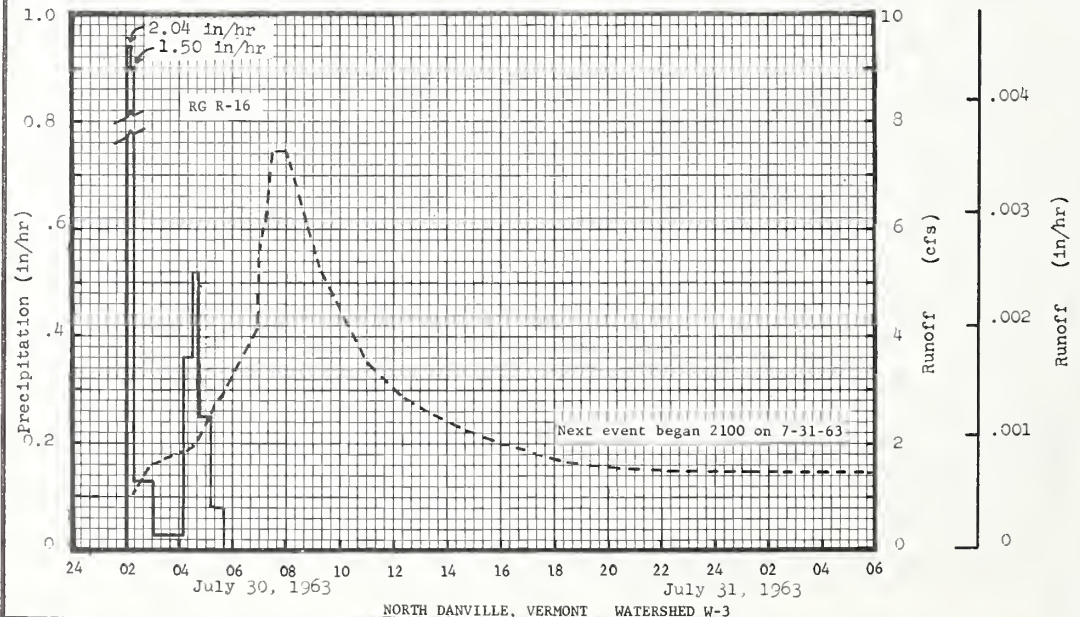
NOTES: PRECIPITATION VALUES ARE FOR R-16. ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. FOR OTHER PRECIPITATION RECORDS SEE PAGE 67.5-2 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1959-63 RECORDS.

1963 MEAN DAILY DISCHARGE (cfs)						NORTH DANVILLE, VERMONT WATERSHED W-3 67.03						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	2.65	1.75	1.45	9.43	34.01	3.76	1.64	1.22	1.56	1.30	2.03	4.74
2	2.47	1.75	1.39	14.17	20.25	3.37	1.49	1.88	1.32	1.19	1.94	4.33
3	2.45	1.88	1.37	32.28	17.41	3.58	2.35	2.15	1.26	1.22	1.73	3.50
4	2.45	1.98	1.41	20.67	16.88	3.73	1.77	3.65	2.09	1.30	1.49	3.29
5	2.45	1.81	1.45	14.53	21.42	3.58	2.71	2.77	1.43	1.22	1.62	2.90
6	2.45	1.73	1.45	11.97	14.42	3.41	2.09	1.62	1.32	1.15	2.33	3.52
7	2.45	1.73	1.45	13.87	12.29	3.48	2.01	1.28	1.17	1.13	4.35	3.16
8	2.45	1.75	1.45	13.83	14.00	3.12	4.44	1.34	1.15	1.13	3.52	2.82
9	2.45	1.69	1.45	11.97	16.83	3.16	3.84	1.26	1.13	1.09	7.00	9.92
10	2.45	1.64	1.45	10.82	12.63	2.88	2.41	1.73	1.11	1.09	3.09	5.08
11	2.45	1.64	1.45	10.58	17.22	2.73	2.11	1.28	1.09	1.15	4.25	3.69
12	2.45	1.64	1.45	16.98	19.69	3.37	1.81	1.30	1.22	1.34	3.73	8.81
13	2.45	1.64	1.45	18.65	15.81	3.09	1.56	3.12	1.49	1.13	2.88	3.48
14	2.30	1.58	1.43	18.22	12.72	2.56	1.60	7.36	1.22	1.09	2.58	3.14
15	2.33	1.56	1.43	19.54	11.22	2.58	1.90	3.65	1.13	1.09	2.22	2.99
16	2.22	1.56	1.47	26.16	9.35	2.47	1.83	2.56	1.11	1.09	2.28	2.92
17	2.05	1.56	1.45	24.45	8.53	3.73	1.43	1.79	1.07	1.09	2.22	2.92
18	1.98	1.56	1.51	42.44	9.58	3.99	1.71	1.90	1.00	1.09	3.65	2.88
19	1.98	1.56	1.45	26.61	10.34	2.56	2.07	1.69	1.02	1.09	5.04	2.73
20	2.18	1.56	1.54	47.98	10.84	2.33	1.47	1.45	1.11	1.09	2.97	2.58
21	2.11	1.56	1.56	53.72	9.81	8.79	2.84	1.32	1.02	1.07	2.80	2.47
22	2.03	1.56	1.62	42.05	8.62	3.80	2.09	1.22	1.02	1.02	2.86	2.43
23	2.05	1.54	1.54	26.50	8.34	3.05	1.47	1.66	1.02	1.02	6.21	2.43
24	2.03	1.45	1.62	25.67	6.89	2.47	1.24	1.77	1.02	1.02	6.51	2.43
25	2.03	1.45	2.15	22.38	6.04	2.07	1.00	1.54	1.00	1.07	3.16	2.43
26	1.98	1.45	4.89	19.93	5.48	1.92	.90	1.32	.96	1.07	2.80	2.43
27	1.98	1.45	11.88	18.56	5.06	1.86	.92	1.22	.96	1.02	2.84	2.43
28	1.88	1.45	9.81	19.12	4.76	1.98	.97	1.19	1.13	1.02	2.56	2.37
29	1.73	-----	6.21	20.42	4.72	1.75	.98	1.34	1.92	1.02	4.78	2.28
30	1.75	-----	6.38	29.83	4.76	1.71	2.60	1.45	1.73	1.02	1.71	2.22
31	1.75	-----	8.64	-----	4.27	-----	1.37	2.88	-----	1.02	-----	2.24
MEAN	2.21	1.62	2.47	22.78	12.07	3.10	1.89	2.00	1.23	1.11	3.24	3.41
INCHES	.770	.511	.958	7.686	4.209	1.045	.658	.696	.414	.386	1.265	1.187

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0115151. RECORDS ARE EXCELLENT. SOME PERIODS OF WINTER RECORDS ARE ADJUSTED DUE TO ICE JAMS AT THE WEIR.

1963			SELECTED RUNOFF EVENT				NORTH DANVILLE, VERMONT				WATERSHED W-3		67.03		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)					
Event of July 30-31, 1963															
7-30	.00	1/.0011	7-30	RG	R-16		7-30	0218	1.02	.0000					
				0206	.00	.00		0230	1.22	.0001					
				0211	2.04	.17		0240	1.43	.0002					
				0217	1.50	.32		0250	1.58	.0003					
				0302	.13	.42		0320	1.66	.0007					
				0414	.03	.46		0335	1.73	.0009					
				0429	.36	.55		0415	1.81	.0015					
				0444	.52	.68		0430	1.98	.0017					
				0510	.25	.79		0520	2.71	.0026					
				0540	.08	.83		0600	3.22	.0035					
				OTHER	GAGE	TOTALS		0635	3.78	.0045					
				RG	R-1	1.05		0645	4.03	.0048					
				RG	R-3	1.04		0700	5.57	.0054					
				RG	R-6	.92		0715	6.06	.0060					
				RG	R-20	.85		0735	7.45	.0071					
				RG	R-20A	.84		0800	7.45	.0086					
				6 RG	AVG 2/	.92		0845	6.06	.0109					
								0915	5.31	.0123					
								1100	3.56	.0159					
								1200	3.01	.0175					
								1235	2.82	.0183					
								1315	2.62	.0191					
								1430	2.33	.0206					
								1545	2.07	.0218					
								1645	1.90	.0228					
								1815	1.73	.0241					
								2015	1.58	.0256					
								2200	1.49	.0269					
								2400	1.49	.0283					
								7-31	1130	1.43	.0362				
											1730	1.22	.0399		
											3/2100	1.15	.0419		

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0004798. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, PP. 67.3-5. FOR ISOHYETAL MAP OF THE ABOVE EVENT, SEE PP. 67.5-4 OF THIS VOLUME. 1/ RUNOFF PRIOR TO 0218 ON 7-30-63. FOR 30-DAY ANTECEDENT RAINFALL AND RUNOFF SEE PREVIOUS PAGE. 2/ THIESSEN WEIGHTED USING 6 RAIN GAGES. 3/ BEGINNING OF NEXT EVENT.



MONTHLY PRECIPITATION AND RUNOFF (inches)						NORTH DANVILLE, VERMONT						WATERSHED W-5		67.05											
						AREA—27,469 ACRES (42.92 SQ. MILES)																			
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL											
1963	P 1/	2.30	2.55	2.86	2/4.18	2.74	1.54	3.47	4.66	1.53	.47	5.46	1.89	33.65											
	Q	1.14	.50	2.46	7.76	3.27	.38	.23	.36	.15	.14	.92	1.44	18.75											
STA AV 3/ P		1.93	2.61	2.13	3.79	2.86	3.14	4.16	3.12	2.73	3.31	3.39	2.09	35.26											
	(60-63) Q	1.65	1.54	2.55	6.89	2.79	1.00	.58	.41	.38	1.09	1.29	1.32	21.49											
MEAN P 4/																									
68 YR		2.35	2.14	2.47	2.66	2.95	3.49	3.64	3.58	3.48	2.90	2.99	2.47	35.12											
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																									
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																						
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS										
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME									
1963	4-21	.04	4-21	.04	4-22	.07	4-22	.20	4-22	.35	4-22	.56	4-22	1.04	4-24	2.96									
MAXIMUMS FOR PERIOD OF RECORD																									
1960 TO 1963	4-18 1960	.04	4-18 1960	.04	4-18 1960	.08	10-7 1962	.20	10-7 1962	.38	10-6 1962	.70	4-7 1962	1.07	4-12 1960	3.14									
NOTES: Quality of records: P and Q, excellent. Watershed conditions: Forest, predominantly hardwoods, 67%; cultivated land consisting of mostly clover, orchard grass, and timothy hay with very little in row crops, 17%; pasture of mostly bluegrass, 13%; idle land in tall grasses and woody plants, 2%; and homesites and roads, 1%. 1/ Monthly P values are arithmetic averages using 24 rain gages. 2/ Snow water equivalent on March 25 was 9.99 inches and had all melted by April 22. 3/ Runoff records began Jan. 1, 1960; precipitation records began at various times, averages computed from gages with records from Jan. 1, 1960 to Dec. 31, 1963; average P values from arithmetically averaged monthly values. 4/ Mean P based on 68-yr (1895-1962) U.S. Weather Bureau record period at St. Johnsbury, Vt.																									
1963 DAILY AIR TEMPERATURE (degrees F)						NORTH DANVILLE, VERMONT						WATERSHED W-5		67.05											
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
1	23	-9	19	-4	20	5	56	30	45	27	76	46	86	64	74	58	62	46	59	30	40	30	17	6	
2	23	2	25	8	32	19	52	38	45	27	79	54	88	58	69	63	68	48	70	47	38	28	22	8	
3	22	18	24	14	30	18	38	34	61	30	75	51	66	47	78	64	66	54	62	50	28	24	23	18	
4	23	16	3	-19	38	20	39	19	71	45	76	56	62	43	72	62	61	42	49	32	40	24	20	15	
5	16	10	18	3	36	20	29	16	57	32	76	56	65	46	68	61	60	40	60	30	42	34	26	9	
6	22	10	25	14	30	24	39	24	56	30	73	52	66	52	74	58	62	42	68	42	43	40	22	12	
7	21	18	19	-12	27	18	44	34	54	32	70	46	66	54	74	60	68	48	72	54	51	43	30	21	
8	24	19	-3	-20	32	12	38	26	60	40	70	47	65	39	72	56	70	50	56	34	50	44	33	26	
9	25	20	17	-8	33	18	34	22	68	47	64	42	60	45	72	54	69	51	45	23	44	38	34	24	
10	31	23	24	8	32	16	31	26	47	28	58	31	62	45	62	49	58	44	57	28	39	36	25	12	
11	32	23	22	12	22	11	34	28	34	26	50	36	68	51	63	48	68	44	54	38	37	34	16	4	
12	26	20	24	16	28	20	40	29	48	24	45	43	80	58	64	48	61	38	61	38	38	34	14	3	
13	28	6	18	10	34	27	38	36	60	33	66	42	80	52	59	48	52	35	48	26	36	32	22	14	
14	15	4	18	8	30	18	38	34	60	40	60	36	65	54	60	50	58	34	60	35	34	26	25	10	
15	15	0	8	0	27	12	43	30	58	40	48	32	72	56	62	47	64	38	67	44	33	26	10	4	
16	10	-8	4	-3	28	7	44	27	66	39	50	30	77	51	58	46	70	40	64	43	34	25	8	1	
17	24	4	19	-2	33	26	40	28	74	44	68	40	79	57	62	42	71	50	60	42	42	24	9	-1	
18	27	17	35	19	33	20	42	24	58	46	66	42	78	56	57	45	75	51	66	46	49	24	12	3	
19	25	20	38	31	38	16	54	18	66	48	72	38	76	61	64	52	70	52	69	48	42	33	10	-4	
20	32	21	32	23	29	24	66	50	58	42	68	50	78	52	64	50	53	41	69	50	42	29	3	-10	
21	25	-1	28	2	38	20	63	42	62	39	56	44	76	52	71	52	52	35	52	36	42	34	6	-10	
22	10	-6	6	-7	29	22	42	36	56	38	54	42	76	55	72	56	48	37	46	32	48	42	16	4	
23	20	-4	13	0	29	17	45	37	38	29	73	43	79	55	70	55	45	30	64	33	52	33	21	0	
24	-4-10	25	11	41	17	44	34	60	26	84	61	84	55	60	45	56	28	70	48	31	20	20	16		
25	8-10	20	8	51	40	47	38	68	42	84	57	89	61	56	44	66	36	70	50	25	18	20	10		
26	9	-3	12	3	54	43	47	35	72	46	83	61	80	60	62	42	68	46	66	51	40	20	10	0	
27	18	4	18	-8	47	33	47	38	75	49	81	60	87	68	62	46	59	46	58	47	43	22	12	-2	
28	5	-5	20	5	37	24	49	37	70	52	80	56	89	71	64	44	53	36	53	40	30	18	15	-2	
29	12	-5	---	---	36	19	64	44	64	53	71	56	88	72	58	51	44	40	42	26	45	30	20	10	
30	16	2	---	---	53	33	45	38	70	53	80	57	75	57	61	50	46	30	32	26	49	12	10	-10	
31	11	-4	---	---	42	27	---	---	72	50	---	---	76	53	62	49	---	---	40	26	---	---	---	15	-3
AV.	19	6	19	3	34	20	44	31	60	38	68	46	75	54	65	51	60	42	58	38	40	29	18	6	
MEAN	12.5		11.0		27.0		37.5		49.0		57.0		64.5		58.0		51.0		48.0		34.5		12.0		
STA AV	20	3	23	7	32	17	45	28	61	41	70	50	72	53	70	52	64	46	53	35	38	26	23	9	
NOTES: TEMPERATURE VALUES ARE FROM R-1, READINGS TAKEN DAILY FROM HYGROTHERMOGRAPH CHARTS. FOR OTHER TEMPERATURE RECORDS SEE PAGES 67.2-1 AND 67.3-1 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1960-63 RECORDS.																									

1963 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W-5 67.05						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.08	.00	.35	.00	.00	.11	.00	.00	.55	.20
2	.00	.00	.14	.11	.00	.00	.07	.92	.00	.00	.09	.00
3	.00	.00	.00	.86	.00	.00	.00	.	.50	.11	.00	.00
4	.00	.05	.16	.65	.00	.00	.33	.89	.06	.15	.00	.04
5	.00	.18	.04	.12	.35	.00	.18	.01	.00	.00	.00	.21
6	.00	.10	.90	.00	.00	.12	.00	.00	.00	.00	.15	.00
7	.00	.10	.35	.00	.00	.00	.30	.00	.00	.00	.37	.00
8	.00	.03	.00	.00	.51	.00	.25	.00	.00	.08	.55	.00
9	.00	.00	.00	.00	.02	.06	.00	.25	.00	.00	.35	.78
10	.00	.00	.38	.30	.81	.00	.00	.05	.00	.00	.13	.20
11	.08	.00	.09	.25	.30	.12	.00	.12	.00	.30	.41	.05
12	.15	.45	.25	.00	.00	.08	.00	.04	.47	.00	.16	.35
13	.47	.19	.30	.00	.00	.00	.00	.86	.00	.00	.22	.04
14	.02	.03	.10	.00	.15	.08	.03	.79	.00	.00	.11	.10
15	.00	.10	.00	.00	.05	.00	.15	.21	.00	.00	.04	.18
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.15	.03
17	.00	.02	.14	.00	.00	.75	.00	.00	.00	.00	.00	.00
18	.00	.00	.15	.47	.33	.00	.21	.17	.00	.00	.55	.06
19	.00	.20	.07	.22	.00	.00	.19	.00	.13	.00	.02	.02
20	.16	.17	.35	.17	.47	.11	.01	.00	.02	.00	.02	.02
21	.08	.35	.00	.72	.00	1.10	.23	.00	.00	.00	.08	.00
22	.00	.02	.00	.05	.11	.08	.30	.00	.07	.00	.02	.05
23	.51	.00	.00	.00	.20	.00	.07	.13	.00	.00	.72	.01
24	.23	.14	.00	.49	.00	.00	.00	.12	.00	.00	.00	.12
25	.00	.06	.00	.14	.00	.00	.00	.05	.00	.00	.00	.15
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
27	.67	.00	.10	.00	.00	.18	.00	.00	.10	.00	.00	.04
28	.04	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.04
29	.00	.00	.00	.00	.00	.00	.00	.15	.62	.00	.70	.00
30	.00	-----	.00	.65	.12	.00	1.13	.49	.03	.00	.88	.04
31	.00	-----	.00	-----	.00	-----	.00	.10	-----	.07	-----	.00
TOTAL	2.41	2.79	3.60	5.20	3.77	2.68	3.15	5.46	2.05	.71	6.27	2.75
STA AV	3.05	3.79	3.26	4.12	3.45	4.15	3.91	3.81	2.88	4.85	4.61	2.97

NOTES: PRECIPITATION VALUES ARE FOR R-1, ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. STA AV (STATION AVERAGE) BASED ON 1959-63 RECORDS.

1963 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W 5 67.05						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.10	.00	.30	.00	.00	.11	.00	.00	.45	.00
2	.00	.55	.13	.05	.00	.00	.25	.82	.00	.00	.28	.00
3	.00	.00	.00	1.05	.00	.00	.00	.00	.15	.04	.12	.30
4	.00	.06	.12	.25	.00	.00	.27	.36	.00	.03	.01	.00
5	.00	.09	.00	.00	.15	.00	.03	.01	.00	.00	.00	.00
6	.00	.10	.57	.00	.00	.05	.00	.00	.00	.00	.08	.00
7	.00	.00	.05	.00	.00	.00	.31	.00	.00	.00	.36	.00
8	.00	.00	.00	.00	.14	.00	.89	.00	.00	.14	.38	.00
9	.00	.00	.00	.00	.00	.05	.00	.14	.00	.00	.53	.67
10	.00	.00	.33	.10	.63	.00	.00	.05	.00	.00	.10	.05
11	.09	.00	.03	.00	.24	.09	.00	.03	.00	.09	.30	.00
12	.25	.35	.25	.00	.00	.09	.00	.01	.32	.00	.17	.21
13	.33	.02	.20	.00	.00	.00	.00	.89	.00	.00	.00	.05
14	.00	.04	.05	.00	.03	.00	.35	.39	.00	.00	.01	.01
15	.00	.05	.00	.00	.00	.00	.04	.08	.00	.00	.01	.01
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00
17	.00	.00	.20	.00	.00	.63	.00	.00	.00	.00	.00	.00
18	.00	.00	.03	.28	.15	.00	.08	.15	.00	.00	.25	.05
19	.00	.10	.00	.17	.00	.00	.02	.00	.01	.02	.03	.00
20	.20	.17	.23	.25	.16	.02	.00	.00	.00	.00	.00	.00
21	.02	.13	.00	.40	.00	.48	.20	.00	.00	.00	.02	.00
22	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.02
23	.54	.00	.00	.15	.00	.00	.00	.57	.00	.00	.39	.03
24	.04	.10	.00	.15	.00	.00	.00	.02	.00	.00	.01	.14
25	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.54	.00	.00	.00	.00	.05	.00	.00	.08	.00	.00	.12
28	.05	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00
29	.01	.00	.00	.00	.00	.00	.00	.08	.65	.05	.72	.00
30	.00	-----	.00	.55	.04	.00	.92	.00	.00	.00	.43	.00
31	.00	-----	.00	-----	.00	-----	.00	.02	-----	.00	-----	.00
TOTAL	2.11	1.81	2.29	3.40	1.84	1.46	3.36	3.73	1.24	.37	4.73	1.68
STA AV	2.02	2.18	1.78	2.90	1.98	2.57	3.23	3.49	2.37	3.76	3.48	1.97

NOTES: PRECIPITATION VALUES ARE FOR R-11, ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. FOR OTHER PRECIPITATION RECORDS SEE PAGES 67.3-2 AND 67.2-2 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1959-63 RECORDS.

1963 MEAN DAILY DISCHARGE (cfs)						NORTH DANVILLE, VERMONT WATERSHED W-5 67.05						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	73.44	19.00	21.83	303.67	438.07	22.97	5.95	5.67	11.06	9.07	8.79	47.35
2	70.32	19.00	21.83	345.07	223.15	20.98	5.39	7.66	8.22	7.09	15.03	31.76
3	69.18	19.56	21.55	558.58	174.66	19.85	8.51	15.88	6.52	6.52	14.46	25.52
4	65.50	19.00	21.27	434.95	169.27	17.86	6.52	16.16	10.49	7.09	10.77	23.53
5	69.47	19.28	22.12	239.31	220.88	17.01	10.21	22.12	8.79	6.52	11.06	20.42
6	68.62	19.56	23.53	209.82	149.14	15.88	7.66	12.48	7.37	5.95	12.76	19.28
7	68.05	20.42	24.67	226.83	121.92	16.45	7.09	9.36	6.24	5.67	23.04	27.50
8	68.05	20.13	24.10	217.76	125.89	13.89	30.34	7.66	5.10	5.39	38.56	24.10
9	68.62	19.85	24.67	179.20	178.35	13.61	31.47	6.24	4.82	5.39	97.54	102.36
10	66.35	19.85	25.52	153.40	124.19	14.18	12.76	6.81	4.25	5.10	40.83	105.19
11	65.50	19.85	25.24	149.43	228.54	12.76	10.21	6.24	3.97	5.10	52.46	52.46
12	63.80	19.85	25.24	262.56	217.19	15.59	8.79	6.24	4.25	7.09	57.56	31.19
13	62.95	20.70	26.65	266.53	172.11	15.88	7.37	11.63	7.09	7.09	32.32	58.69
14	50.19	21.17	27.79	240.73	127.88	12.76	7.37	82.23	6.24	6.24	21.55	41.40
15	39.13	21.27	26.94	248.67	113.98	11.63	8.22	39.13	5.39	5.95	17.86	30.62
16	30.91	20.98	28.92	316.15	94.70	11.06	8.22	20.42	4.54	5.95	16.73	28.64
17	26.65	19.56	30.06	305.09	84.50	14.18	6.81	13.04	4.25	5.10	18.15	56.14
18	24.95	19.56	42.81	538.73	87.33	18.15	6.52	12.76	3.97	5.10	20.13	76.84
19	24.67	20.13	36.86	344.50	106.90	13.89	9.07	11.06	3.69	5.10	58.41	81.09
20	26.09	22.40	39.13	603.10	98.96	10.21	6.81	9.07	3.69	5.10	23.82	79.96
21	28.07	23.82	40.83	535.90	108.88	48.49	8.79	7.37	3.97	4.82	19.56	92.72
22	23.82	23.25	51.89	543.83	81.66	20.98	11.34	6.24	3.97	4.54	19.56	84.78
23	22.97	23.25	46.50	292.90	74.00	15.88	7.37	11.34	3.69	4.54	29.49	77.12
24	22.97	23.25	53.59	297.44	68.62	12.19	5.67	19.28	3.40	4.82	87.05	97.54
25	21.55	23.25	73.44	249.52	58.69	9.92	4.54	11.63	3.40	4.82	33.46	108.60
26	20.13	22.97	125.33	211.24	48.20	8.79	3.69	8.51	3.40	4.54	24.38	82.23
27	20.70	22.68	292.33	187.14	40.55	7.66	2.84	6.81	3.40	4.25	19.56	41.11
28	20.70	22.97	578.43	185.72	32.61	7.66	2.55	6.24	3.97	4.54	19.56	49.34
29	19.85	-----	412.27	193.66	28.92	6.52	2.27	5.95	7.66	4.25	24.10	43.67
30	20.42	-----	346.49	328.63	32.89	6.52	12.76	7.66	15.03	4.25	208.12	32.89
31	20.13	-----	347.91	-----	27.50	-----	8.79	16.45	-----	4.25	-----	24.10
MEAN	43.29	20.89	93.83	305.67	124.51	15.08	8.88	13.87	5.71	5.53	36.19	54.76
INCHES	1.136	.495	2.462	7.762	3.267	.383	.223	.364	.145	.145	.919	1.437

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0008665. RECORDS ARE EXCELLENT. SOME PERIODS OF WINTER RECORDS ARE ADJUSTED DUE TO ICE JAMS AT THE CONTROL SECTION.

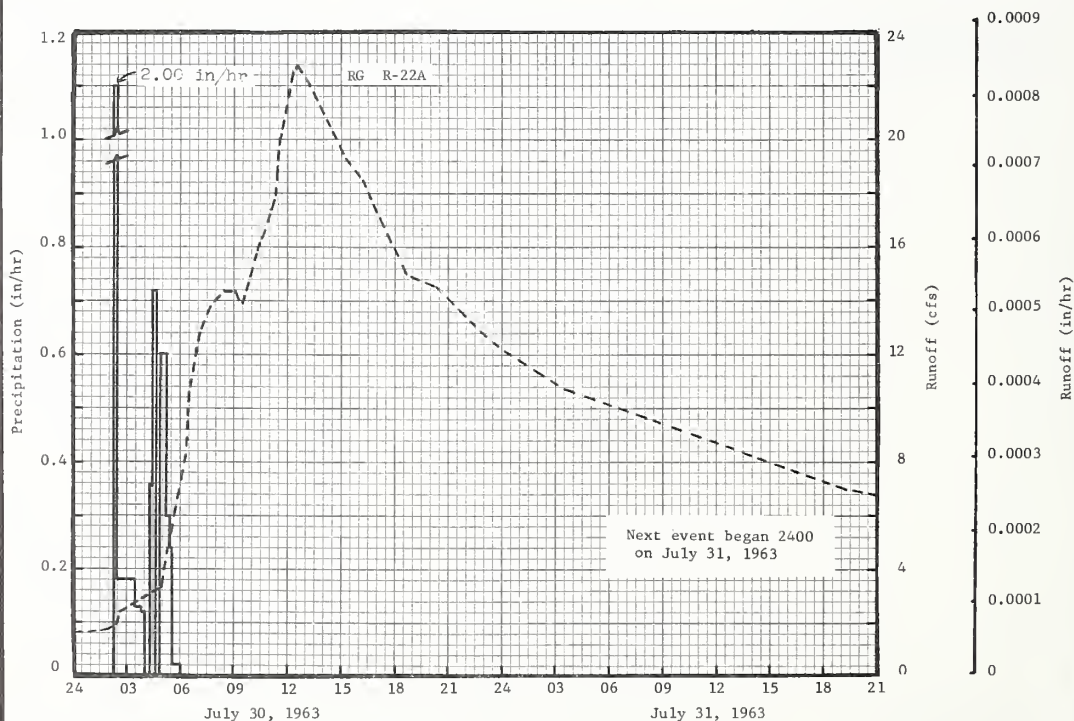
1963 SELECTED RUNOFF EVENT						NORTH DANVILLE, VERMONT WATERSHED W 5 67.05					
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF					
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of July 30-31, 1963											
7-30	.00	1.00002	7-30	RG	R-22A		7-30	0225	1.98	.00000	
				0220	.00	.00		0230	2.27	.00000	
				0225	2.00	.10		0315	2.55	.00001	
				0331	.18	.30		0352	2.84	.00002	
				0355	.13	.35		0440	3.12	.00002	
				0400	.12	.36					
				0425	.00	.36		0445	3.12	.00002	
				0430	.36	.39		0505	3.97	.00003	
				0438	.72	.45		0530	5.39	.00004	
				0440	.00	.45		0545	6.52	.00004	
7-30			7-30	0455	.60	.60		0608	7.37	.00005	
				0510	.60	.75		0615	8.22	.00005	
				0520	.30	.80		0638	10.77	.00007	
				0530	.24	.80		0700	12.19	.00008	
				0600	.02	.85		0715	13.04	.00009	
								0745	13.89	.00012	
				RG	R-1			0830	14.46	.00015	
				0210	.00	.00		0900	14.46	.00018	
				0215	4.20	.35		0930	13.89	.00021	
7-30			7-30	0223	.90	.47		1022	16.16	.00025	
				0245	.19	.54		1115	17.86	.00030	
				0315	.16	.62					
				0415	.03	.65		1137	19.85	.00033	
				0445	.40	.85		1207	21.83	.00037	
				0500	.40	.95		1230	22.68	.00040	
				0515	.24	1.01		1315	21.83	.00046	
				0530	.16	1.05		1515	19.28	.00060	
								1615	18.43	.00067	

Continued on next page

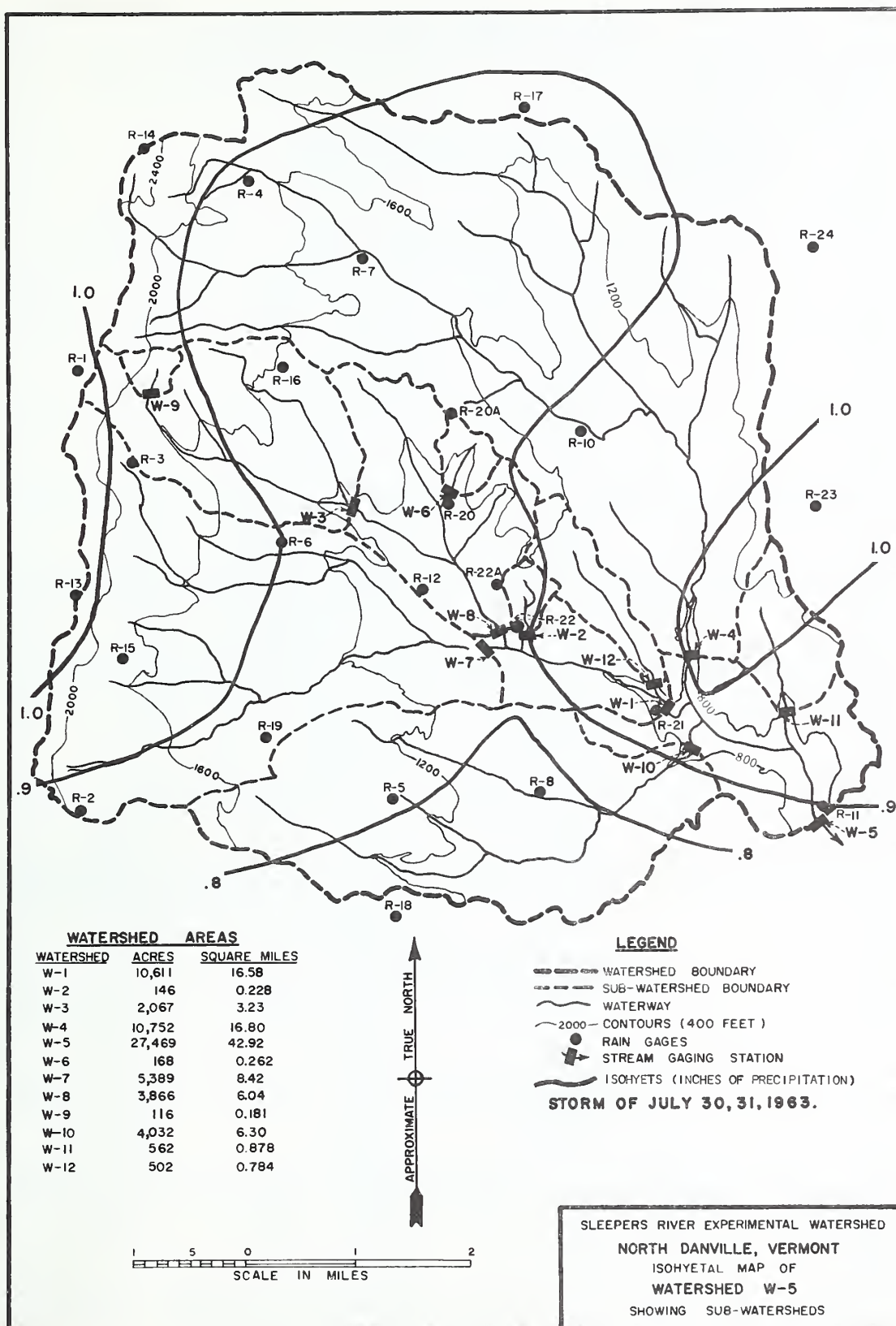
NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.000036104. FOR TOPOGRAPHIC AND GEOLOGIC MAPS OF THE WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, PP. 67.5-5 AND 6. 1/ RUNOFF PRIOR TO 0225 on 7-30-63.

1963			SELECTED RUNOFF EVENT				NORTH DANVILLE, VERMONT				WATERSHED W-5		67.05
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)			
Event of July 30-31, 1963—Continued													
Watershed conditions: 67% forest; 17% hay with average of 6-inch growth since last cutting; 13% pastured land; 2% idle land with dense grass and brush growth; and 1% home-sites and roads.			7-30	RG	R-11		7-30						
				0215	.00	.00		1652	17.30	.0071			
				0222	2.14	.25		1753	16.16	.0077			
				0300	.08	.30		1845	15.03	.0081			
				0345	.04	.33		2030	14.46	.0091			
				0437	.02	.35		2223	13.04	.0100			
				0445	1.13	.50		2400	12.19	.0107			
				0452	1.29	.65	7-31	0345	10.49	.0122			
				0500	.75	.75		1315	8.51	.0154			
				0508	.38	.80		1852	7.09	.0170			
				0515	.43	.85		<u>2</u> 2400	6.52	.0182			
				0530	.12	.88							
				0545	.08	.90							
			OTHER	RAIN	GAGE	TOTALS							
			R-2	.95	R-17	.87							
			R-3	.96	R-18	.73							
			R-4	1.02	R-19	.87							
			R-5	.80	R-20	.81							
			R-6	.90	R-20A	.81							
			R-7	.81	R-21	.99							
			R-8	.77	R-23	1.03							
			R-10	.95	R-24	.93							
			R-12	.86									
			R-15	.98	AVG <u>1</u>	.89							
			R-16	.83									

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.000036104. FOR ISOHYETAL MAP OF ABOVE EVENT, SEE NEXT PAGE. FOR 30-DAY ANTECEDENT RAINFALL SEE PREVIOUS PAGE. 1/ ARITHMETIC AVERAGE OF 22 RAIN GAGES. 2/ BEGINNING OF NEXT EVENT.



NORTH DANVILLE, VERMONT WATERSHED W-5



REYNOLDS, IDAHO WATERSHED W-1 (68 036 068)

LOCATION: Owyhee County, Idaho; 34 miles south of Nampa; north flowing tributary to the Snake River.

AREA: 57,700 acres (90.2 sq. miles).

SLOPES:	Slope--Percent	0-3	3-8	8-15	15-25	25-35	Over 35
	Percent of area	3	17	28	30	14	8

SOILS: Moderately weathered soils on alluvium; residual on basaltic materials; residual on granitic material; residual on tuffs and ash.

Soil	Per- cent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to (in.)	Perme- ability	
Reywat	12.65	7	Weak to moderate fine platy to granular	Moderate	Weak to moderate medium subangular blocky	Moderately slow	15	Very slow or none	Medium
Harmehl	10.68	17	Moderate to strong fine granular	Moderate	Moderate medium and fine subangular blocky	Moderately slow	35	Very slow or none	Medium
Bakeoven	8.73	3	Weak very fine platy to granular	Moderate	Weak very fine and fine subangular blocky	Moderate or moderately slow	7	Very slow or none	Medium
Gabica	8.33	9	Moderate fine granular	Moderate	Weak fine subangular blocky	Moderately slow	17	Very slow or none	Medium
Ruclick	7.62	8	Moderate very fine and fine granular (platy in upper part)	Moderate	Moderate or strong fine angular blocky (prismatic)	Slow	30	Very slow or none	Medium to slow
Takeuchi	6.87	12	Moderate very fine granular (platy in upper part)	Rapid or moderately rapid	Moderate or weak medium and fine subangular blocky	Moderately rapid	27	Slow to none	Rapid
Nannyton	5.04	6	Weak to strong very thin to medium platy	Moderate	Weak or moderate very fine to medium subangular blocky	Moderate	12	Moderate to rapid	Medium
Larimer	3.75	6	Weak to moderate very thin or thin platy	Moderate	Moderate very fine and fine subangular blocky	Moderately slow	15	Rapid	Medium
Gemid	3.71	9	Moderate or strong very fine to medium	Moderate	Strong or moderate medium prismatic (subangular blocky)	Slow	32	Very slow or none	Medium to slow
Babington	3.08	8	Weak very thin platy (very fine granular)	Moderate	Moderate to strong fine and very fine subangular blocky (prismatic)	Moderately slow	20	Moderate or rapid	Medium

SOILS-CONTINUED

Soil	Per- cent of area	Topsoil			Subsoil		Substratum		
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability	Internal drainage
Searla	3.01	8	Weak very fine granular (platy in upper part)	Moderate	Moderate fine and very fine subangular blocky	Moder- ately slow	40	Moderate	Medium
Glasgow	2.95	9	Weak thin platy (very fine granular)	Moderate or mod- erately slow	Moderate medium or fine prismatic (subangular blocky)	Slow	25	Very slow	Medium to slow
Farrot	2.90	10	Moderate fine and very fine granular (platy in upper part)	Rapid or moder- ately rapid	Moderate medium and fine prismatic (subangular blocky)	Moder- ately slow	30	Slow to none	Medium
Kanlee	2.81	15	Moderate or strong very fine and fine granular	Rapid or moder- ately rapid	Moderate fine subangular blocky	Moder- ately slow	33	Slow to none	Medium
Castle Valley	2.19	6	Very weak very fine granular (platy in top)	Rapid or moder- ately rapid	Weak medium subangular blocky	Moder- ately slow or moder- ate	12	Slow to none	Medium
Nettleton	2.14	20	Moderate or strong fine and very fine granular	Moder- ate or moder- ately slow	Strong or moderate- ly coarse and medium angular blocky (weak to strong prismatic)	Slow	50	Moder- ately slow	Slow
19 Additional Series	13.55	—	—	—	—	—	—	—	—
Total	100 %								

EROSION:

Erosion class	1	2	3	4
Percent of area	99	1	0	0

LAND CAPABILITY:

Class	I	II	III	IV	V	VI	VII	VIII
Percent of area	0	0	3	25	0	25	29	18

GEOLOGY: The Reynolds Creek Watershed lies in a structural basin of complexly folded and faulted formation, mostly of igneous volcanic origin.

SURFACE DRAINAGE: The main water way of Reynolds Creek has a length of 15.6 miles and overall slope of 4 percent. The channel is well defined and provides very good drainage.

CHARACTER OF FLOW: Perennial except during short periods of extreme drought.

INSTRUMENTATION: The location of instrument sites is found on the map, page 8, by the use of sections from the Federal system of land division. The sections have been renumbered beginning in the upper left corner (Northwest) and each section subdivided into 100 squares as shown in the upper right corner. An instrument location is found within a numbered section by moving down the grid and across. Any site is designated by a 6-digit number: the first three digits designate the section; the fourth digit, a code number for the designation of more than one site within the smallest subdivision; the fifth digit, the grid row designation; and the sixth digit, the grid column designation.

Runoff: 20,000 cfs capacity Overflow-V Weir calibrated by hydraulic modeling, three water-stage recorders, and low-flow rating by current meter measurement.

Precipitation: 92 Belfort recording rain gages. One standard rain gage at the Reynolds Weather Station.

Temperature: Maximum-minimum at the weather station.

Snow: Nine snow courses sampled monthly with snow tube and scales.

WATERSHED CONDITIONS: The watershed is almost entirely in sagebrush rangeland. Approximately 2 percent of the area is covered by small stands of scattered Douglas-fir, aspen, and alpine fir. The rangeland is represented by desert, foothill, and high mountain range. The major forage plant in each different range is cheatgrass, bluebunch wheatgrass, and Idaho fescue, respectively. During the late 1800s and early 1900s, the area was heavily used by sheep, cattle, and wild horses. Most of the rangeland on public domain still shows the results of this period of intensive use. The cover condition of the public land varies from poor to good, with most of the grazing land in fair condition. The private grazing land is in good to excellent condition, with most of it in excellent condition. Private rangeland occupies approximately 22 percent of the watershed area. Improvement practices on private land include sagebrush eradication and rotation and deferred grazing systems. Permanent fields of flood irrigated alfalfa occupy about 3 percent of the watershed area. Yields vary between 1 to 3 tons per acre. Fertilization is not practiced.

GENERALLY REPRESENTS: Intermediate elevation sagebrush rangeland watersheds of Idaho, Oregon, Nevada, and Utah; with some forest above 5500 ft. elevation and irrigated agriculture in the lower valleys. Owyhee High Plateau (D-25) and Malheur High Plateau (D-23) land resource areas. See location map Misc. Pub. 945.

MONTHLY PRECIPITATION AND RUNOFF (inches)						REYNOLDS, IDAHO WATERSHED W-1 (68 036 068)							
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963 P 1	1.75	2.32	.80	2.21	2.02	3.12	.03	.60	.56	1.09	3.02	.72	18.24
O	.172	.490	.161	.425	.277	.219	.030	.004	.005	.008	.068	.057	1.916
STA AVG P 2													
O													
MEAN P 3													
30 YR	1.32	1.33	1.32	1.16	1.29	.89	.21	.16	.39	.84	1.20	1.32	11.43

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	1-31	.040	1-31	.038	1-31	.068	1-31	.143	1-31	.20	1-31	.29	1-31	.35	1-31	.47

MAXIMUMS FOR PERIOD OF RECORD																
19 62 4	1-31	.040	1-31	.038	1-31	.068	1-31	.143	1-31	.20	1-31	.29	1-31	.35	1-31	.47
19 63																

Notes: Watershed conditions same as described under WATERSHED CONDITIONS. For map of watershed see p. 68.1-8.
 1/ Precipitation data based on Thiessen weighted average for 20 gages of a master rain gage network of 92 gages.
 2/ Precipitation records began Sept. 1960, runoff records began Dec. 1962. Lengths of records not sufficient to establish STA AV. 3/ Mean P based on 30-yr (1931-1960) U.S. Weather Bureau record period at Boise, Idaho; 50 miles NE of watershed. 4/ Period of record based only on 1963 data.

1963 DAILY AIR TEMPERATURE (degrees F)											REYNOLDS, IDAHO WATERSHED,													
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	49	16	54	28	46	23	41	27	73	35	62	42	89	51	87	38	78	53	86	44	59	23	40	14
2	50	26	52	39	43	28	47	30	67	35	64	49	88	55	89	38	75	49	85	39	58	21	37	10
3	42	27	58	43	41	21	56	19	54	41	56	40	87	46	91	43	89	41	90	47	55	24	28	11
4	36	23	63	36	45	18	56	27	54	45	59	41	82	55	88	47	92	48	84	45	55	31	24	17
5	44	13	63	38	45	24	52	36	70	36	57	45	83	50	90	50	90	52	82	48	58	33	25	18
6	40	12	62	40	47	15	56	37	72	45	56	43	88	45	91	52	89	50	83	43	55	30	38	22
7	28	17	59	30	49	21	54	36	68	47	70	40	81	49	98	50	85	49	77	48	51	23	36	17
8	32	18	60	28	54	28	51	31	56	38	72	45	81	45	94	54	84	48	72	42	55	39	32	20
9	41	16	55	26	56	15	50	26	53	24	68	40	82	43	93	55	80	40	74	38	54	43	31	26
10	31	12	43	27	49	27	50	31	67	43	60	39	76	43	90	53	88	47	61	33	55	29	33	19
11	13	-12	43	26	41	27	52	30	56	42	65	48	77	43	90	55	90	46	75	47	56	30	24	7
12	10	-18	42	15	47	29	54	33	64	41	77	48	81	47	90	57	90	44	67	49	58	30	30	3
13	14	-6	37	20	48	16	64	36	68	47	85	48	87	51	82	60	71	50	69	45	59	34	35	13
14	27	10	43	20	51	29	73	31	65	39	70	49	83	49	88	50	70	48	70	37	66	40	37	16
15	44	22	47	27	42	24	43	31	66	37	81	52	80	41	83	48	70	40	73	42	58	26	40	21
16	41	24	42	27	43	24	39	25	69	40	83	49	76	40	90	50	63	38	70	41	54	24	48	26
17	40	15	42	31	44	32	47	17	70	43	80	50	77	43	86	47	67	38	71	38	58	23	49	28
18	33	17	43	32	45	25	42	12	73	38	86	46	81	48	86	49	71	38	66	29	50	31	44	21
19	28	-7	49	36	58	30	43	18	77	51	82	46	86	54	86	54	77	38	72	38	50	28	45	21
20	30	-7	53	36	64	24	46	26	80	55	82	33	85	50	80	50	72	43	74	36	45	31	44	32
21	37	9	52	30	66	29	50	34	81	56	63	47	89	49	79	46	76	46	67	40	40	20	38	25
22	47	9	52	30	63	31	50	36	82	53	62	46	90	53	75	42	80	38	73	40	42	31	39	14
23	40	9	56	30	58	25	52	31	76	46	58	48	91	52	80	42	79	35	66	36	43	30	36	16
24	44	4	60	33	56	22	57	26	73	44	68	41	95	42	77	49	78	35	63	32	48	25	40	11
25	35	25	60	30	62	17	63	25	74	45	72	47	80	41	77	37	85	40	56	23	49	25	44	23
26	31	0	67	48	65	27	69	31	76	48	79	42	85	44	78	40	89	45	44	23	48	22	40	16
27	30	10	56	33	61	32	61	35	77	46	83	36	87	43	85	45	83	46	51	15	50	20	44	27
28	29	8	51	23	57	33	66	32	78	43	68	44	91	54	80	44	73	48	66	24	46	15	40	29
29	37	14	---	---	47	34	67	37	80	50	67	41	92	56	88	40	78	47	62	27	42	15	29	20
30	29	13	---	---	46	30	73	33	81	52	77	36	83	42	80	50	91	43	58	26	42	16	45	19
31	51	22	---	---	46	30	---	---	75	39	---	---	82	47	72	43	---	---	49	17	---	---	37	20
AV.	35	11	52	31	51	26	54	29	70	43	70	44	84	46	85	46	60	44	70	37	52	27	37	19
MEAN	23.1		41.5		38.3		41.6		56.8		57.3		65.9		66.3		61.8		53.0		39.2		28.0	
STA AV	34	11	46	28	49	27	54	27	67	41	73	44	85	47	84	47	70	42	63	35	52	27	41	21

Notes: TEMPERATURE DATA ARE BASED ON REYNOLDS CLIMATOLOGICAL STATION, PUBLISHED IN U.S. WEATHER BUREAU CLIMATOLOGICAL DATA FOR IDAHO, VOL. 66. STA AV BASED ON RECORDS FROM JAN. 1962 THROUGH DEC. 1963.

1963 DAILY PRECIPITATION (inches)						REYNOLDS, IDAHO WATERSHED, W-1 (68 036 068)						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.77	.00	.01	.03	.00	.00	.00	.03	.00	.00	.00
2	.00	.04	.02	.00	.22	.22	.00	.00	.00	.00	.00	.00
3	.00	.07	.00	.05	.45	.04	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.03	.02	.72	.00	.00	.00	.00	.47	.00
5	.00	.00	.00	.24	.00	.21	.00	.00	.00	.07	.05	.00
6	.00	.00	.00	.73	.00	.00	.00	.03	.00	.02	.18	.07
7	.00	.00	.00	.28	.02	.00	.00	.00	.00	.00	.27	.00
8	.00	.00	.00	.00	.34	.00	.00	.00	.00	.00	.57	.00
9	.02	.00	.00	.01	.13	.37	.00	.16	.04	.56	.42	.02
10	.00	.00	.00	.03	.09	.11	.00	.00	.00	.00	.00	.00
11	.00	.00	.06	.02	.00	.00	.00	.04	.00	.00	.00	.00
12	.00	.00	.02	.00	.00	.00	.00	.03	.02	.00	.00	.00
13	.00	.15	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00
14	.00	.00	.02	.29	.00	.27	.00	.00	.03	.00	.14	.03
15	.00	.00	.00	.09	.08	.00	.00	.00	.12	.00	.09	.00
16	.00	.09	.00	.07	.00	.00	.00	.00	.01	.00	.00	.00
17	.00	.17	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
18	.07	.50	.00	.03	.00	.03	.03	.00	.00	.00	.00	.00
19	.00	.11	.00	.06	.00	.19	.00	.00	.00	.18	.02	.00
20	.00	.14	.00	.06	.00	.37	.00	.00	.25	.00	.10	.10
21	.00	.00	.00	.01	.00	.17	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.02	.22	.12	.00	.00	.00	.00	.03	.00
23	.00	.00	.00	.00	.19	.17	.00	.00	.00	.11	.61	.00
24	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.04	.00
25	.00	.04	.00	.00	.00	.00	.00	.00	.00	.07	.00	.00
26	.00	.19	.00	.15	.00	.00	.00	.00	.00	.00	.00	.15
27	.00	.05	.24	.03	.00	.00	.00	.00	.00	.00	.00	.04
28	.03	.00	.34	.00	.00	.05	.00	.00	.00	.00	.00	.31
29	.10	---	.00	.00	.00	.01	.00	.00	.00	.04	.00	.00
30	.74	---	.00	.00	.00	.07	.00	.01	.00	.04	.00	.00
31	.79	---	.10	---	.19	---	.00	.33	---	.00	---	.00
TOTAL	1.75	2.32	.80	2.21	2.02	3.12	.03	.60	.56	1.09	3.02	.72
STA AV	1.7											

NOTES: PRECIPITATION VALUES ARE BASED ON THIESEN WEIGHTED AVERAGES FOR 20 GAGES OF A MASTER RAIN GAGE NETWORK OF 92 GAGES. 1/ LENGTH OF RECORD NOT SUFFICIENT TO ESTABLISH STA AV.

1963 MEAN DAILY DISCHARGE (cfs)						REYNOLDS, IDAHO WATERSHED W-1 (68 036 068)						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	2.69	<u>362.30</u>	23.28	10.43	21.51	5.91	<u>2.61</u>	.39	.38	.49	.78	4.76
2	3.00	91.57	<u>23.39</u>	7.17	19.10	<u>4.98</u>	8.29	.36	.32	.52	.76	4.37
3	3.23	92.05	19.44	<u>5.69</u>	33.46	8.85	6.41	.31	.33	.50	.83	4.31
4	2.64	65.34	18.38	7.97	33.39	8.98	5.51	.25	.29	.52	1.15	4.34
5	1.96	42.85	18.27	13.98	32.71	32.45	4.26	.25	.31	.56	3.55	4.44
6	1.68	30.02	17.73	<u>189.38</u>	36.01	21.23	3.10	.25	.29	.62	3.21	5.14
7	2.25	24.34	15.98	122.62	36.66	13.31	3.44	.25	.32	.62	8.31	3.57
8	1.95	20.81	15.23	67.91	36.93	12.85	3.45	.28	.28	.62	<u>13.30</u>	4.52
9	2.27	18.10	14.57	50.71	<u>46.08</u>	13.11	3.12	.50	.32	<u>.88</u>	9.70	4.43
10	1.87	14.88	14.02	42.99	32.74	25.42	3.26	.46	.31	.70	6.63	2.76
11	1.57	12.29	13.54	35.67	37.62	18.89	2.41	.35	.29	.67	5.68	3.02
12	1.19	<u>9.16</u>	13.01	31.71	31.93	15.57	2.44	.36	.25	.67	5.05	5.30
13	1.19	10.59	11.72	32.53	32.64	12.21	1.67	.29	<u>.24</u>	.69	5.16	6.99
14	<u>1.00</u>	11.13	12.41	39.95	25.36	13.10	1.89	.29	<u>.24</u>	.65	7.84	5.19
15	1.87	10.38	10.87	39.63	22.44	12.34	1.25	.29	.31	.54	5.86	4.12
16	2.51	9.73	10.71	30.51	21.97	9.60	1.19	.30	.34	.55	5.05	4.14
17	2.27	10.53	10.98	26.63	17.08	8.26	1.08	.31	.35	.54	4.80	4.47
18	1.87	15.76	9.02	24.39	15.80	7.20	1.11	.28	.38	.56	4.56	4.12
19	1.50	41.28	8.28	25.50	16.12	16.74	.91	.31	.41	.73	4.80	4.09
20	1.19	72.43	7.54	24.13	12.77	25.98	.80	.29	.50	.64	3.46	4.38
21	1.15	39.55	8.47	17.87	11.03	<u>65.01</u>	.85	.29	.44	.64	3.72	4.07
22	1.18	31.65	9.80	22.09	12.09	24.61	.84	.29	.41	.65	3.95	<u>2.53</u>
23	1.18	26.79	8.39	21.18	28.31	28.33	.87	.27	.40	.64	7.95	3.17
24	1.18	23.93	6.25	21.88	14.16	28.35	.69	.25	.39	.66	11.56	2.68
25	1.12	20.77	<u>4.89</u>	22.23	9.48	21.84	.60	.25	<u>.60</u>	.75	8.32	<u>4.31</u>
26	1.06	32.91	5.19	19.53	8.93	19.01	.58	.28	.55	.70	7.29	3.18
27	1.06	24.73	5.15	19.73	7.64	15.41	.54	.27	.53	.68	7.00	4.38
28	1.09	22.96	21.60	16.67	5.14	12.41	.52	.25	.49	.70	5.86	6.53
29	1.12	13.32	18.88	<u>4.02</u>	15.16	.50	<u>.24</u>	.47	.72	5.26	<u>7.07</u>	
30	1.08	-----	9.86	22.87	4.68	12.98	.52	.28	.48	.82	5.42	5.99
31	<u>367.40</u>	-----	<u>10.71</u>	-----	<u>5.17</u>	-----	<u>.40</u>	.41	-----	.78	-----	5.24
MEAN	13.46	42.45	12.68	34.41	21.71	17.70	2.36	.30	.37	.63	5.56	4.44
INCHES	.172	.490	.161	.425	.277	.219	.030	.004	.005	.008	.068	.057

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .000412. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 4820. MAX AND MIN FLOWS EACH MONTH ARE UNDERLINED.

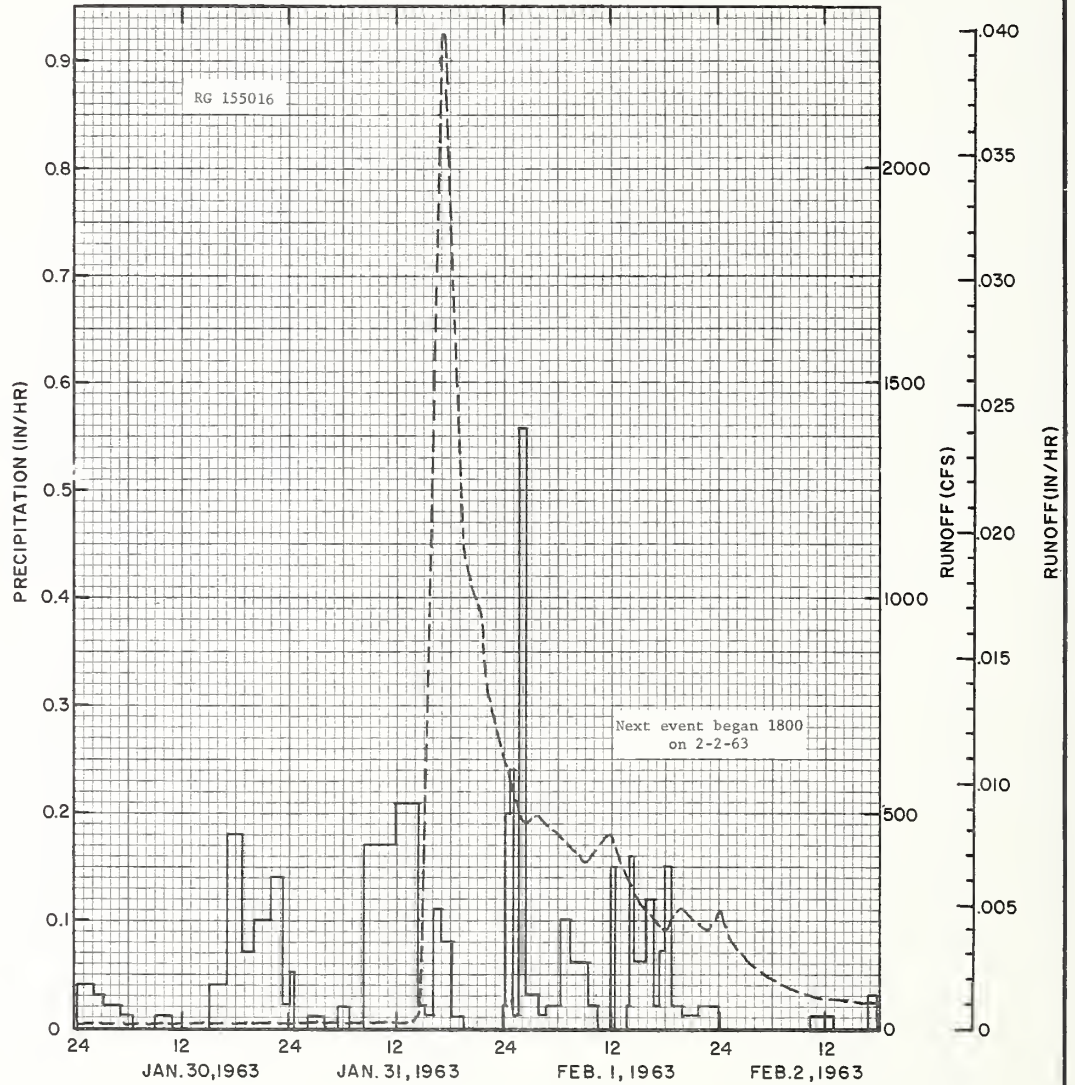
1963 SELECTED RUNOFF EVENT				REYNOLDS, IDAHO WATERSHED W-1 (68 036 068)						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of January 29 - February 2, 1963										
RG 155016										
1-29	.00	1/.0004	1-29	1500	.00	.00	1-29	2400	1.12	.0000
				1700	.02	.04	1-30	1015	1.18	.0006
				2315	.00	.04		2300	.90	.0008
				2400	.01	.05		2400	1.06	.0008
			1-30	0200	.04	.13	1-31	0300	1.50	.0009
				0300	.03	.16		1215	1.37	.0011
				0500	.02	.19		1430	2.02	.0012
				0615	.01	.20		1445	77.79	.0013
				0855	.00	.20		1500	372.53	.0023
				1100	.01	.21		1515	590.71	.0043
				1445	.00	.21		1530	710.00	.0070
				1700	.04	.30		1545	900.00	.0103
				1835	.18	.59		1600	1058.00	.0143
				2000	.07	.69		1615	1472.50	.0196
				2148	.10	.87		1630	1954.50	.0267
				2325	.14	1.10		1645	2100.00	.0350
				2400	.02	1.11		1700	2330.00	.0442
			1-31	0013	.05	1.12		1715	2241.00	.0537
				0200	.00	1.12		1730	2183.00	.0628
				0328	.01	1.14		1745	1963.50	.0714
				0510	.00	1.14		1800	1658.00	.0789
				0630	.02	1.16		1815	1542.50	.0855
				0815	.00	1.16		1830	1350.00	.0915
				1200	.17	1.80		1900	1155.00	.1018
				1420	.21	2.30		2000	1025.00	.1199
				1445	.02	2.31		2030	990.00	.1282
				1610	.01	2.32		2115	965.00	.1404
				1705	.11	2.42		2130	895.00	.1442
				1800	.08	2.49		2145	860.00	.1478
				1930	.01	2.50		2200	780.00	.1513

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY .00001717. 1/ RUNOFF PRIOR TO 2400 ON JAN. 29, 1963. FOR 30-DAY ANTECEDENT P AND Q, SEE PRECEDING TABLES.

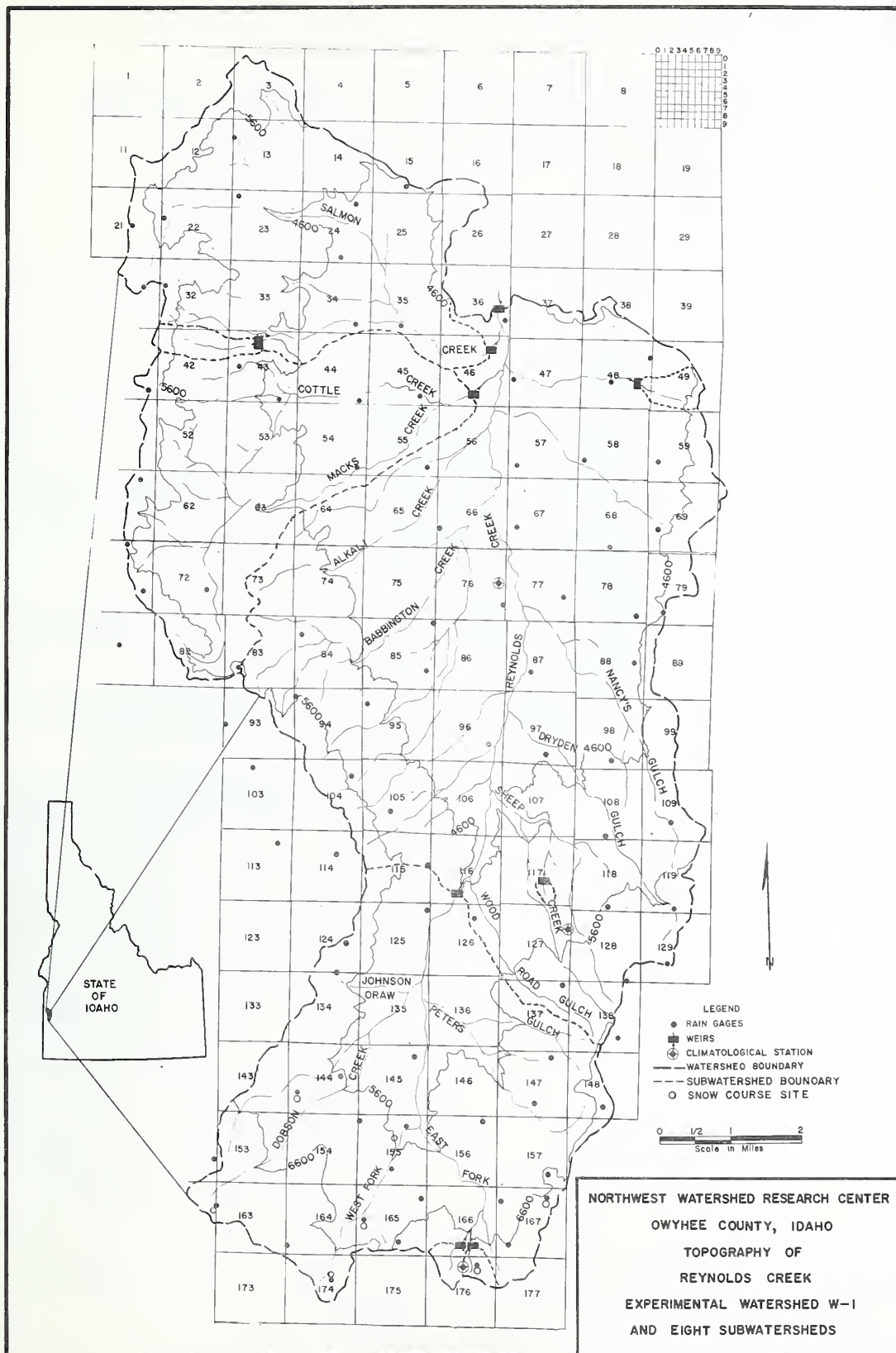
1963 SELECTED RUNOFF EVENT			REYNOLDS, IDAHO				WATERSHED W-1 (68 036 068)			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
			Event of January 29 - February 2, 1963—Continued							
			1-31	2400	.00	2.50	1-31	2300	700.00	.1635
			2-01	0030	.02	2.51		2400	620.00	.1738
				0045	.20	2.56	2-01	0100	513.99	.1824
				0100	.24	2.62		0130	481.20	.1864
				0145	.01	2.63		0245	487.97	.1965
				0215	.56	2.91		0800	402.99	.2352
				0350	.03	2.95		0845	399.30	.2402
				0440	.01	2.96		1045	442.01	.2541
				0625	.02	3.00		1200	444.16	.2633
				0720	.10	3.09		1215	439.89	.2652
				0928	.06	3.22		1230	412.36	.2669
				1033	.02	3.24		1300	372.52	.2702
				1210	.00	3.24		1500	298.65	.2813
				1218	.15	3.26		1615	260.80	.2871
				1350	.00	3.26		1700	234.20	.2902
				1415	.02	3.27		1745	229.07	.2930
				1430	.16	3.31		1830	236.80	.2959
				1450	.06	3.33		1915	260.80	.2990
				1545	.12	3.44		2200	227.80	.3102
				1640	.02	3.46		2300	227.80	.3139
				1735	.02	3.48		2345	240.76	.3168
				1800	.07	3.51		2400	260.80	.3179
				1845	.15	3.62	2-02	0030	234.20	.3199
				1955	.02	3.64		0045	215.26	.3209
				2140	.01	3.65		0130	187.99	.3234
				2205	.02	3.66		0300	151.01	.3276
				2400	.02	3.69		0600	103.21	.3339
								0900	83.00	.3385
								1200	65.16	.3422
								1630	54.52	.3466
								1800	55.57	<u>1</u> /.3480

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY .00001717. 1/ BEGINNING OF NEXT EVENT.

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY .00001717. 1/ BEGINNING OF NEXT EVENT.



REYNOLDS, IDAHO WATERSHED W-1 (68 036 068)

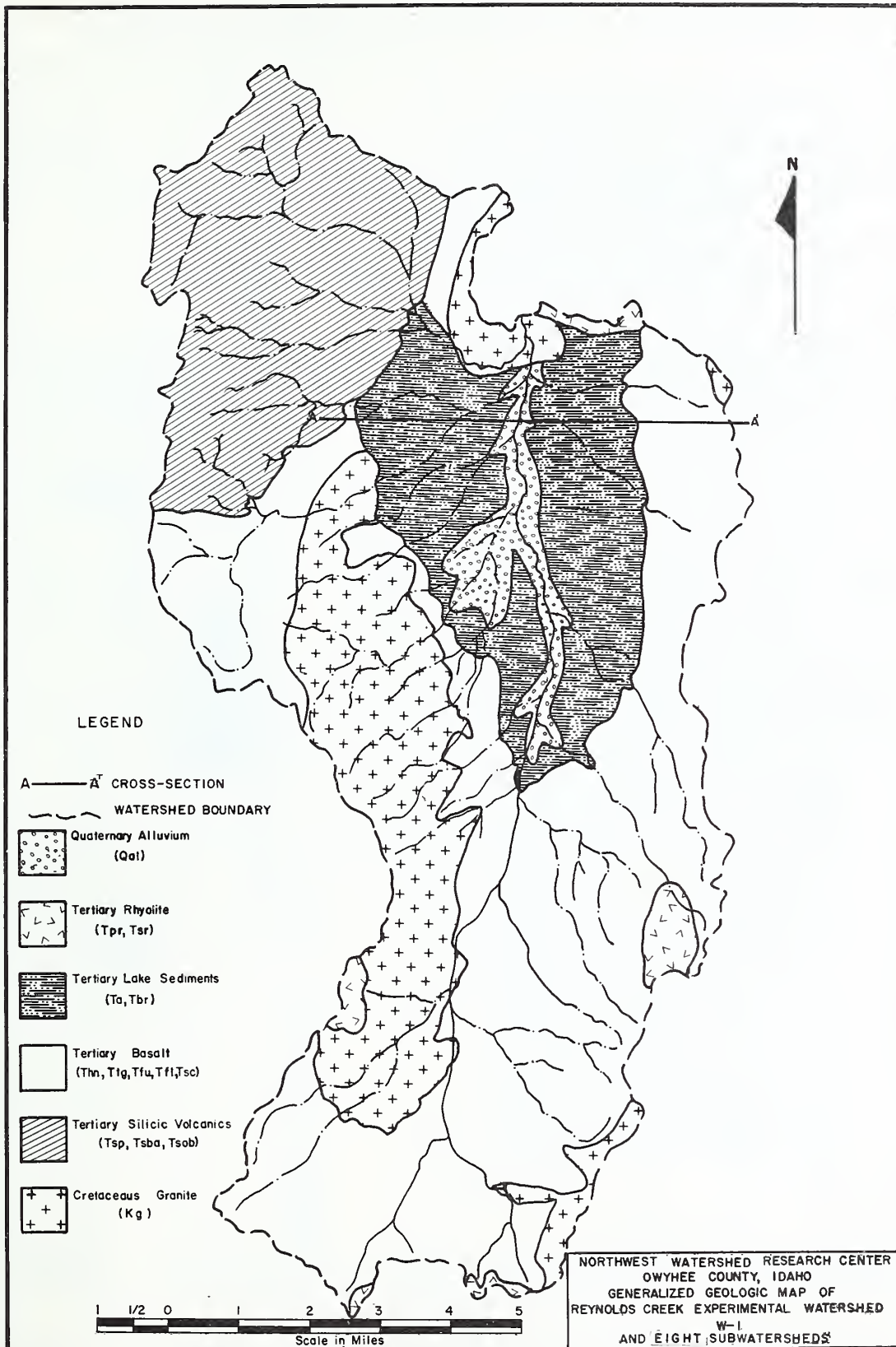


HYDROGEOLOGY OF THE REYNOLDS CREEK EXPERIMENTAL WATERSHED

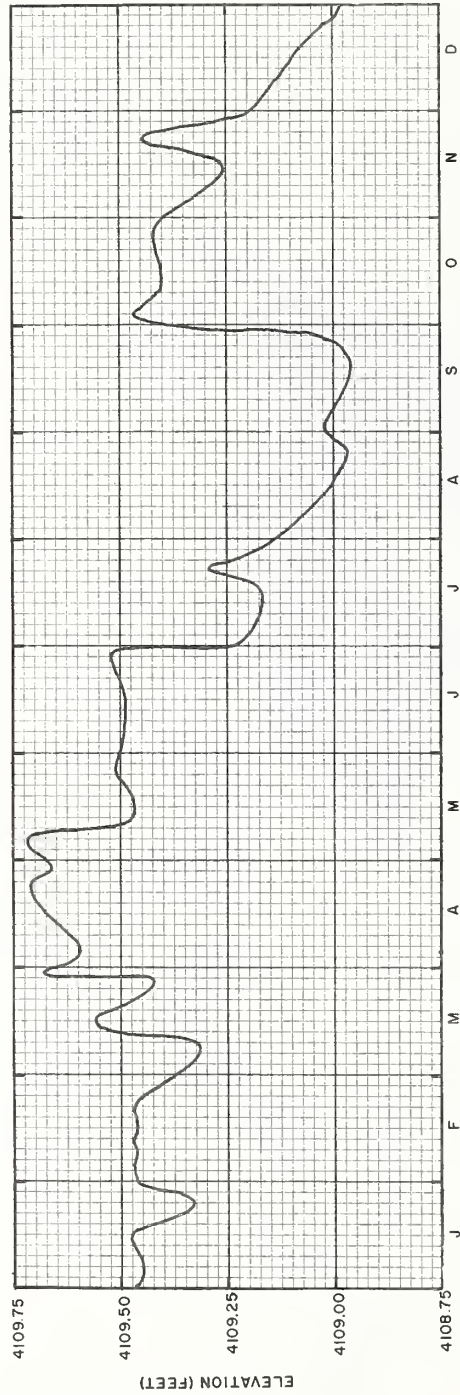
Occurrence and movement of ground water on the Reynolds Creek Experimental Watershed is heavily influenced by the geologic formations and related structural trends. The age, approximate thickness, areal extent and hydrogeologic characteristics of each formation is given below, followed by a geologic cross section through the central portion of the watershed. The major aquifers on the watershed occur in the basalt and lake sediments. None of these yield a sustained flow in excess of 450 g.p.h.

Stratigraphy of experimental watershed:

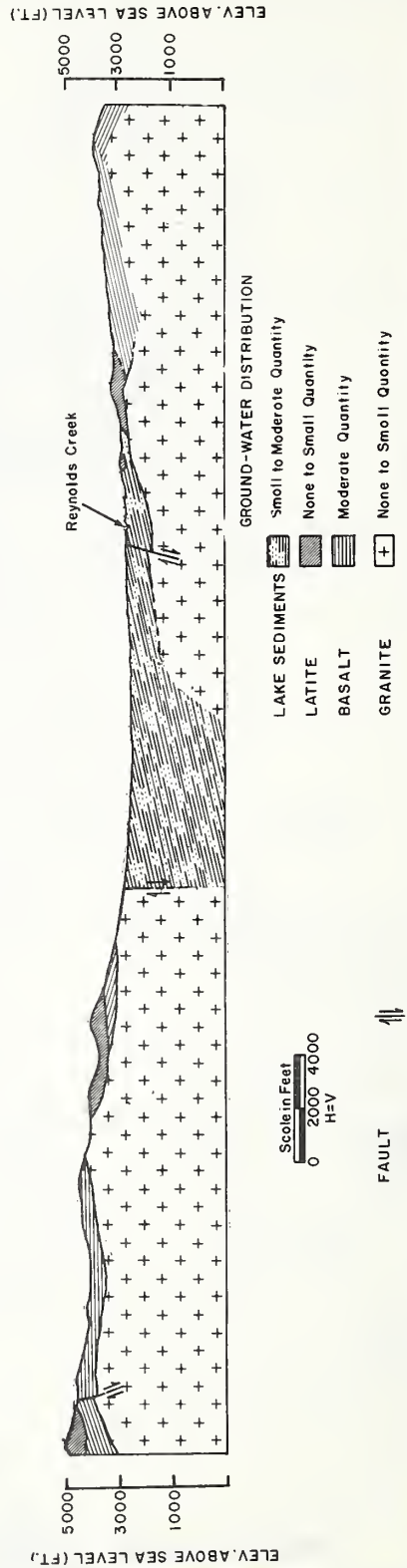
System	Group	Formation (map symbols)	Approx. thickness (ft)	Percent of Area	Description
Quaternary		Alluvium and terrace deposits (Qal, Qt, Qp-1, Qp-2, Qoal)	<20	2.5	Alluvial gravels and sands. Moderate water quantity, good quality. Source of domestic water supply in Reynolds Valley. Small contribution to streamflow from bank storage.
Tertiary	Reynolds Basin Group	Rhyolitic, welded tuff (Tpr-1, Tpr-2)	>200	1.3	Ash-flow tuffs of probable Pliocene age. Contains very little or no water. No apparent contribution to streamflow.
		Arkosic sand, granitic gravel and silty clay (Ta)	150	5.5	Uncemented and cemented. Coarse to fine grained sands. Silt and silty clay with carbonaceous plant impressions common. Moderate amounts of water in uncemented sands and gravels. Some baseflow contribution to streamflow.
		Silver City Rhyolite (Tsr)	2000	0.5	Contains very small quantities of water. Contribution to streamflow is insignificant.
		Boston Ranch Unit (Tbr)	720	8.0	Low permeability sediments (mostly clays). Small water quantity and poor quality. Provides very little baseflow to streams except in irrigated area as return flow through sand lenses.
		Upper Latite Unit (Tfu, Tgu, Ttu)	500	7.0	Grey, glassy latite, thinly fractured and nonvesicular. Associated with impermeable welded tuff. No contribution to baseflow. Some interflow spring activity.
		Toll Gate Basalt (Ttg)	>70	3.0	Basalt, characterized by regular prismatic jointing. Single flow. Vesicular at flow top. Contains small to moderate amounts of water depending on elevation.
		Lower Latite Unit (Tfl, Tgl, Ttl)	<100	5.1	Dense glassy latite. Mostly nonvesicular. Associated with impermeable welded tuff. No contribution to baseflow. Some interflow spring activity.
		Soldier Cap Basalt (Tsc)	850	2.2	Highly resistant to weathering, well developed vertical joints. Highly vesicular zones occur within flows as well as at flow contacts. Contribution to streamflow is insignificant.
		Hoot Nanny Basalt (Thn)	>3100	33.0	Finely crystalline, flow tops highly vesicular and fractured. Contains small to moderate amounts of water at flow contacts. Well yields 5-50 g.p.m. Water quality good. Significant contribution to streamflow. Considerable interflow spring activity along faults and stratigraphic contacts.
		Salmon Creek Volcanics (Tsp, Tsba, Tsob)	>3800	13.2	Porphyritic olivine basalt, andesite and olivine basalt flows with intercalated breccias, basaltic pyroclastics. Probably contains moderate amounts of water. Provides baseflow to tributaries in northwest portion of watershed. Considerable interflow spring activity.
Cretaceous		Granitic Rock (Kg)	—	18.7	In part, a quartz monzonite considered a stock of the Idaho Batholith. Contains very little water and this in joint systems only. Some interflow activity.
			TOTAL	100	PERCENT



HYDROGRAPH — WELL NUMBER 1, 1963
(Grid Location 048039)



STRATIGRAPHIC CROSS SECTION OF REYNOLDS CREEK WATERSHED



MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 100 AT ANADARKO AREA—2,340,000 ACRES (3,656 SQ. MILES)										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963 P 1/ Q		.042	.055	.064	.068	.032	.105	.024	.010	.048	.015	.017	.018	.498		
STA AV P1/ (61-63)Q2/		.054	.057	.062	.074	.088	.287	.058	.035	.132	.098	.113	.056	1.114		
MEAN P 3/ 63 YR		1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-25	.0012	6-25	.0012	6-25	.0024	6-25	.007	6-25	.014	6-25	.025	6-24	.038	6-23	.065
MAXIMUMS FOR PERIOD OF RECORD 4/																
1961 TO 1963	6-12 1962	.0021	6-12 1962	.0021	6-12 1962	.0043	6-12 1962	.013	6-12 1962	.027	6-12 1962	.051	6-11 1962	.096	6-7 1962	.257
Notes: Watershed conditions not applicable. For maps, see Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, pp. 69,7-7 and 9. 1/ Since this is the inflow station to a study reach, these data are not applicable. 2/ Runoff records began Oct. 1961. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Oct. 1961.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1963): Maximum — June 25, 2,950 cfs (12.85 ft). Minimum — Aug. 11, 24.3 cfs (6.68 ft) PERIOD OF RECORD: Maximum — June 12, 1962, 5,074 cfs (17.98 ft). Minimum — Aug. 11, 1963, 24.3 cfs (6.68 ft). PEAK DISCHARGES: (Above base of 3,000 cfs) 1963 — none.																
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, and discharge in cfs).																
GAGE HEIGHT		DISCHARGE		GAGE HEIGHT		DISCHARGE		GAGE HEIGHT		DISCHARGE		GAGE HEIGHT		DISCHARGE		
6.40		0.5		6.80		41		9.00		1,100						
6.50		3.0		7.20		138		11.00		1,980						
6.60		13		8.00		510										
1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 100 AT ANADARKO										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	155	<u>143</u>	144	* 195	<u>243</u>	101	159	30	<u>28</u>	47	38	58				
2	154	163	<u>136</u>	* <u>244</u>	* 194	145	109	28	28	47	37	57				
3	153	157	136	542	162	175	78	27	40	46	<u>35</u>	56				
4	154	161	142	278	120	225	73	<u>24</u>	155	* 45	38	56				
5	154	168	163	231	107	144	68	26	* 141	43	45	57				
6	153	* 168	* 324	217	104	122	66	26	74	43	45	58				
7	153	166	<u>442</u>	199	103	164	64	26	51	41	46	59				
8	* 153	166	280	188	145	134	59	* 27	40	40	48	59				
9	153	173	215	181	129	255	57	26	35	39	48	59				
10	153	227	206	167	115	* 369	57	25	33	38	49	64				
11	153	238	219	153	104	421	* 59	24	33	38	49	<u>68</u>				
12	103	245	219	<u>146</u>	93	387	77	28	32	40	48	63				
13	<u>80</u>	240	208	146	88	272	86	31	31	42	* 47	64				
14	90	236	210	149	85	237	81	31	31	37	47	54				
15	102	236	205	160	81	181	142	<u>67</u>	184	36	48	52				
16	135	240	199	178	* 77	138	<u>302</u>	56	867	36	50	61				
17	142	245	199	194	73	123	197	39	* <u>1250</u>	* 36	50	57				
18	141	245	197	* 188	70	84	123	40	<u>568</u>	36	50	54				
19	102	247	186	190	66	79	85	45	289	<u>35</u>	61	57				
20	99	* <u>252</u>	* 188	189	58	76	63	40	189	35	69	56				
21	131	230	196	189	<u>57</u>	72	52	* 35	126	38	76	51				
22	* <u>156</u>	183	185	183	67	<u>68</u>	45	33	97	41	72	<u>44</u>				
23	114	155	177	170	86	94	39	31	75	41	68	* 46				
24	108	150	178	163	115	760	34	31	60	<u>101</u>	66	53				
25	134	149	178	155	99	* <u>2510</u>	* 32	30	55	98	66	63				
26	144	149	182	179	87	1150	<u>31</u>	29	48	73	<u>81</u>	64				
27	144	150	185	220	86	783	32	28	43	94	72	66				
28	137	152	192	209	86	487	33	28	44	74	66	65				
29	136	-----	194	167	71	315	33	28	47	* 51	* 63	66				
30	136	-----	191	169	70	235	36	29	47	41	59	* 66				
31	<u>136</u>	-----	197	-----	83	-----	36	29	-----	40	-----	66				
MEAN	134	194	202	221	101	344	78	32	158	48	55	59				
INCHES	.042	.055	.064	.068	.032	.105	.024	.010	.048	.015	.017	.018				
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .00001017. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 195,000. YEARLY MEAN DISCHARGE, 134 CFS. YEARLY DISCHARGE, .498 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.																

MONTHLY PRECIPITATION AND RUNOFF (inches)							CHICKASHA, OKLAHOMA WATERSHED 200 AT VERDEN AREA — 2,613,000 ACRES (4,083 SQ. MILES)									
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.21 .054	.38 .062	1.52 .059	2.16 .063	1.88 .034	4.47 .105	2.44 .028	1.23 .009	3.63 .045	.70 .014	2.56 .015	.57 .019	21.75 .507			
STA AV 2/P Q	.28 .064	.46 .058	1.03 .055	2.41 .064	2.30 .083	6.40 .288	2.10 .062	1.31 .036	4.31 .122	1.71 .097	2.26 .112	.89 .060	25.46 1.101			
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-25	.0010	6-25	.0010	6-25	.0020	6-25	.006	6-25	.012	6-25	.022	6-25	.034	6-24	.063
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 61 TO 19 63	6-12 1962	.0020	6-12 1962	.0020	6-12 1962	.0039	6-12 1962	.012	6-12 1962	.023	6-12 1962	.046	6-11 1962	.088	6-7 1962	.259
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc.Pub.1070, p. 69.2-1. For maps, see foregoing reference pp. 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 66 gages for the reach between stations at Anadarko and Verden. 2/ Precipitation records began Oct. 1961; runoff records began Oct. 1961. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla; missing months estimated. 4/ Period of record began Oct. 1961.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1963): Maximum — June 26, 2,750 cfs (18.25 ft). Minimum — Sept. 15, 15.9 cfs (7.68 ft). PERIOD OF RECORD: Maximum — June 12, 1962, 5,161 cfs (25.36 ft). Minimum — Sept. 15, 1963, 15.9 cfs (7.68 ft). PEAK DISCHARGES: (Above base of 3,000 cfs) 1963 — none.																
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT				DISCHARGE				GAGE HEIGHT				DISCHARGE				
6.3				0				15.0				1,600				
8.5				58				17.0				2,300				
9.5				190				19.0				3,000				
10.5				340				21.0				3,700				
11.5				550				23.0				4,220				
13.0				890				25.0				5,060				

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 200 AT VERDEN						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.02	.00	.00	.44	.00	.00	.02	.00	.03	.00
2	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.31	.00	.00	.14	.00	.03	.00
4	.11	.00	.43	.00	.23	.00	.00	.00	.00	.00	.00	.00
5	.09	.00	.00	.23	.09	.03	.00	.05	.18	.00	.00	.00
6	.00	.00	.00	.02	.06	.00	.00	.00	.02	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.04	.02	.00	.00	.00	.00
8	.00	.00	.33	.00	.00	1.07	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.13	.00	.04	.00	.00	.00	.00
10	.00	.09	.22	.00	.00	.00	.29	.03	.00	.00	.00	.29
11	.00	.00	.00	.00	.00	.10	.23	.00	.22	.00	.00	.18
12	.00	.00	.00	.00	.00	.00	.01	.12	.01	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.44	.56	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.19	.00	.00	.00
16	.00	.20	.00	.00	.00	.11	.00	.00	2.11	.00	.00	.00
17	.00	.02	.00	.04	.00	.01	.00	.00	.01	.03	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.01	.00
19	.01	.00	.00	.00	.15	.00	.00	.00	.00	.01	1.80	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.37	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.17	.16	.04
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.53	.00
23	.00	.00	.00	.00	.00	2.27	.00	.00	.00	.04	.00	.00
24	.00	.00	.00	.62	.00	.00	.00	.04	.00	.00	.00	.00
25	.00	.00	.00	.01	.04	.00	.02	.00	.73	.00	.00	.00
26	.00	.00	.00	1.23	.00	.00	.12	.00	.00	.00	.00	.00
27	.00	.00	.00	.01	.00	.00	1.10	.00	.00	.00	.00	.00
28	.00	.07	.00	.00	.00	.00	.04	.04	.00	.00	.00	.00
29	.00	-----	.02	.00	.04	.00	.15	.18	.00	.00	.00	.06
30	.00	-----	.43	.00	.37	.00	.00	.02	.00	.00	.00	.00
31	.00	-----	.07	-----	.83	.00	.00	.03	-----	.08	-----	.00
TOTAL	.21	.38	1.52	2.16	1.88	4.47	2.44	1.23	3.63	.70	2.56	.57
STA AV	.28	.46	1.03	2.41	2.30	6.40	2.10	1.31	4.31	1.71	2.26	.89

NOTES: YEARLY PRECIPITATION 21.75 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 66 GAGES ON THE REACH BETWEEN STATIONS 100 AND 200.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 200 AT VERDEN						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	211	236	178	* 170	223	148	277	34	27	51	35	63
2	210	243	181	* 457	* <u>243</u>	157	201	32	27	51	33	61
3	207	220	182	<u>698</u>	205	190	140	29	26	49	30	61
4	206	210	185	436	175	251	106	27	71	* 45	<u>22</u>	61
5	208	211	197	350	140	235	98	25	* 205	* 44	31	61
6	211	* 209	* 246	297	139	161	91	25	138	43	38	62
7	207	201	<u>371</u>	279	134	180	81	26	98	41	39	64
8	* 203	201	351	261	133	180	76	* 26	81	39	39	64
9	200	210	275	242	171	288	67	25	41	36	39	62
10	198	266	244	220	137	* 370	63	24	33	35	40	60
11	195	309	262	200	128	418	* 68	24	28	34	41	67
12	194	306	256	184	115	428	68	<u>23</u>	23	35	42	63
13	163	<u>310</u>	241	176	108	354	109	30	22	36	* 42	55
14	184	301	233	172	106	273	107	30	<u>19</u>	37	42	78
15	167	291	235	168	100	243	108	33	42	33	41	<u>102</u>
16	170	286	231	164	* 95	193	234	<u>80</u>	* 273	* 31	42	63
17	192	289	226	161	89	161	<u>325</u>	58	<u>1440</u>	* 31	42	70
18	198	295	218	* 158	85	142	190	40	737	31	42	68
19	<u>125</u>	297	203	151	81	108	139	44	390	<u>30</u>	60	61
20	137	* 293	* 191	147	77	99	96	47	286	31	81	* <u>22</u>
21	186	284	184	142	<u>63</u>	91	69	* 40	196	32	83	65
22	<u>227</u>	243	176	138	66	<u>85</u>	57	35	153	34	<u>28</u>	86
23	147	210	165	<u>134</u>	77	105	48	31	120	35	95	80
24	191	194	158	137	118	* 465	42	29	92	40	85	82
25	* 190	183	158	139	127	* <u>2080</u>	36	28	82	<u>132</u>	80	81
26	215	180	154	165	111	* <u>1670</u>	* 30	27	66	106	82	75
27	<u>195</u>	<u>177</u>	<u>142</u>	<u>292</u>	<u>101</u>	<u>220</u>	<u>20</u>	<u>26</u>	<u>58</u>	<u>89</u>	<u>56</u>	71
28	204	<u>176</u>	149	247	109	* 699	57	25	49	107	86	72
29	206	-----	149	214	105	484	43	27	49	75	* 74	69
30	200	-----	152	182	93	364	32	28	51	* 48	67	69
31	<u>217</u>	-----	<u>172</u>	-----	<u>106</u>	-----	<u>36</u>	<u>27</u>	-----	<u>38</u>	-----	* 71
MEAN	192	244	209	229	121	385	101	32	164	48	56	68
INCHES	.054	.062	.059	.063	.034	.105	.028	.009	.045	.014	.015	.019

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .000009109. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 217.700. YEARLY MEAN DISCHARGE, 153 CFS. YEARLY DISCHARGE, .507 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 400 NEAR CHICKASHA AREA—2,726,000 ACRES (4,259 SQ. MILES)								
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1963 P 1/ Q	.25 .064	.38 .062	1.85 .062	2.67 .063	1.60 .035	2.38 .098	2.53 .029	1.05 .008	1.72 .040	.51 .013	2.69 .014	.72 .016	18.35 .504	
STA AV 2/P Q	.30 .071	.60 .061	1.28 .059	2.64 .066	2.10 .082	5.22 .296	1.96 .059	1.33 .033	2.81 .110	1.46 .089	2.64 .109	1.00 .059	24.34 1.094	
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-26	.0009	6-26	.0009	6-26	.0018	6-26	.005	6-26	.011	6-25	.021	6-25	.032	6-24	.060

MAXIMUMS FOR PERIOD OF RECORD 4/																
19 61 TO 19 63	6-2 1962	.0022	6-2 1962	.0022	6-2 1962	.0044	6-2 1962	.013	6-2 1962	.025	6-13 1962	.043	6-13 1962	.080	6-8 1962	.245

Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc.Pub.1070, p. 69.4-1. For maps, see foregoing reference pp. 69.7-7 and 9.
1/ Precipitation data obtained from a Thiessen weighted average of 33 gages on the watershed reach between stations at Verden and Chickasha. 2/ Precipitation records began Oct. 1961; runoff records began Oct. 1961. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Oct. 1961.

MISCELLANEOUS DATA	
RUNOFF PEAK DATA: YEAR (1963): Maximum — June 26, 2,510 cfs (17.81 ft). Minimum — Sept. 14, 13.4 cfs (7.52 ft). PERIOD OF RECORD: Maximum — June 2, 1962, 5,998 cfs (26.20 ft). Minimum — Sept. 14, 1963, 13.4 cfs (7.52 ft). PEAK DISCHARGES: (Above base of 3,000 cfs) 1963 — none.	
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft; discharge in cfs).	

GAGE HEIGHT	DISCHARGE
6.40	0
6.90	25
8.10	40
9.00	112
11.00	390
13.50	960
17.60	2,400

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 400 NEAR CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.01	.00	.00	.26	.00	.00	.04	.00	.04	.00
2	.00	.00	.00	.00	.11	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.26	.00	.00	.12	.00	.06	.00
4	.14	.00	.39	.00	.14	.00	.00	.00	.02	.00	.00	.00
5	.11	.00	.00	.22	.02	.00	.00	.00	.24	.00	.00	.00
6	.00	.00	.00	.02	.09	.00	.00	.00	.01	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.29	.00	.00	.05	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.06	.29	.00	.00	.00	.22	.06	.00	.00	.00	.45
11	.00	.00	.00	.00	.00	.04	.53	.00	.23	.00	.00	.20
12	.00	.00	.00	.00	.00	.00	.00	.10	.01	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.31	.45	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00
16	.00	.20	.00	.00	.00	.17	.00	.00	.21	.00	.00	.00
17	.00	.02	.00	.01	.00	.00	.00	.00	.02	.01	.00	.00
18	.00	.00	.01	.00	.00	.00	.00	.18	.00	.00	.00	.00
19	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00	1.89	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.37	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.04	.03
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.66	.00
23	.00	.00	.00	.00	.00	1.60	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.71	.00	.00	.00	.01	.00	.00	.00	.00
25	.00	.00	.00	.02	.00	.00	.11	.00	.52	.00	.00	.00
26	.00	.00	.00	1.68	.00	.00	.19	.00	.00	.00	.00	.00
27	.00	.00	.00	.01	.00	.00	.91	.00	.00	.00	.00	.00
28	.00	.10	.00	.00	.00	.00	.13	.05	.00	.00	.00	.00
29	.00	-----	.01	.00	.00	.00	.13	.20	.00	.00	.00	.04
30	.00	-----	.82	.00	.32	.00	.00	.00	.00	.00	.00	.00
31	.00	-----	.03	-----	.84	-----	.00	.00	-----	.08	-----	.00
TOTAL	.25	.38	1.85	2.67	1.60	2.38	2.53	1.05	1.72	.51	2.69	.72
STA AV	.30	.60	1.28	2.64	2.10	5.22	1.96	1.33	2.81	1.46	2.64	1.00

NOTES: YEARLY PRECIPITATION 18.35 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 33 GAGES ON THE REACH BETWEEN STATIONS 200 AND 400.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 400 NEAR CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	239	236	195	200	* 186	167	<u>352</u>	36	24	51	41	62
2	236	253	195	205	226	150	246	34	24	49	37	59
3	233	273	194	* <u>677</u>	<u>250</u>	177	182	34	24	* 49	38	58
4	233	214	197	457	218	196	133	32	22	46	35	58
5	233	* 220	208	310	179	261	114	28	93	45	<u>34</u>	58
6	233	219	221	276	148	189	103	26	* 164	48	35	58
7	* 232	211	* 332	261	146	155	95	22	100	46	39	58
8	227	211	397	243	144	191	86	22	67	41	39	59
9	221	209	327	233	140	177	74	* 22	50	37	38	59
10	219	230	286	228	163	313	66	<u>21</u>	38	35	40	58
11	215	304	275	212	144	* 359	71	24	31	33	39	57
12	243	308	287	200	136	392	* 68	21	27	35	39	54
13	223	<u>313</u>	269	194	123	378	70	24	22	38	38	50
14	276	312	251	188	117	300	119	28	17	39	* 40	<u>48</u>
15	224	296	250	183	111	260	94	28	17	39	41	48
16	224	293	252	180	104	219	124	37	97	* 34	43	49
17	245	297	246	* 176	* 101	174	270	<u>70</u>	* <u>999</u>	<u>32</u>	45	51
18	248	301	239	176	95	159	240	50	853	32	44	51
19	224	* 306	232	170	89	123	151	36	478	32	56	50
20	<u>320</u>	309	214	165	87	104	114	39	323	33	78	53
21	248	301	* 205	163	83	98	81	38	236	36	77	52
22	240	278	199	159	<u>68</u>	<u>92</u>	66	* 37	178	36	<u>87</u>	51
23	257	241	192	<u>156</u>	73	167	49	32	143	37	87	58
24	<u>179</u>	209	179	<u>156</u>	82	* 231	47	29	115	39	82	* 64
25	239	199	177	160	129	*1360	39	27	95	58	75	69
26	229	194	174	227	116	*2070	* 34	27	86	<u>120</u>	72	71
27	241	<u>193</u>	172	513	101	*1020	<u>22</u>	26	66	67	76	73
28	234	193	169	304	99	764	26	24	57	95	* 84	75
29	233	-----	<u>167</u>	254	110	566	82	23	51	93	74	77
30	232	-----	170	212	99	435	44	25	54	* 70	66	* 80
31	229	-----	<u>188</u>	-----	98	-----	33	26	-----	52	-----	80
MEAN	236	254	228	241	128	375	106	31	152	49	54	60
INCHES	.064	.062	.062	.063	.035	.098	.029	.008	.040	.013	.014	.016

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .000008731. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 227,200. YEARLY MEAN DISCHARGE, 158 CFS. YEARLY DISCHARGE, .504 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

CHICKASHA, OKLAHOMA WATERSHED 600 NEAR TABLER

LOCATION: WATERSHED — Washita River Watershed above Tabler, Okla.; Southwest Central Oklahoma and Texas Panhandle; in Grady, Caddo, Canadian, Kiowa, Washita, Custer, Beckham, and Roger Mills Counties, Okla.; and Hemphill, Wheeler, and Gray Counties, Tex.; Washita River, Red River Basin.

GAGING STATION — NW $\frac{1}{4}$ sec. 23, T. 6 N., R. 6 W., lat. 34°59', long. 97°48'. A cableway (no bridge) over the river about 4- $\frac{1}{2}$ miles south and 1 mile east of Tabler; at river mile 236.1, approximately 7.8 miles downstream from the confluence of the Little Washita River.

AREA: 3,012,000 acres (4,707 sq. miles). Local drainage area for reach between Chickasha (Turnpike) and Tabler gaging stations: 243,050 acres (379.8 sq. miles). See composite map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.7-7.

SLOPES:	Slope — Percent	0-1	1-3	3-5	5-8	8-12	12 and above	1/
	Percent of area	20	15	20	20	20	5	

SOILS: Residual, derived from sandstone and shale, gently rolling to strongly rolling alluvial terraces, and bottom land materials. 1/

Soil	Per- cent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to (in.)	Perme- ability	
Reinach-McLain Port-Yahola Norwood silt loams	38	18	Moderate fine granular	Moderate	Moderate medium granular	Moderate	40	Moderate	Medium
Grant-Nash-Quinlan silt loams	30	10	Moderate medium granular	Moderate	Moderate medium granular	Moderate	24	Moderate	Medium
Vanoss Chickasha Kingfisher silt loams	25	14	Moderate fine granular	Moderate	Moderate fine subangular blocky	Moderate	40	Moderate	Medium
Kirkland-Renfrow silt loams	7	10	Moderate fine granular	Moderate	Strong medium blocky	Very slow	36	Slow	Very slow

EROSION:	Erosion class	1	2	3	4	1/
	Percent of area	10	10	65	15	

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII	1/
	Percent of area	22	15	25	13	5	18	2	

1/ Information presented for general descriptive purposes and is not intended to be precise data.

GEOLOGY: The geologic formations in area tributary to reach, in percent are: Alluvium, 13.4; Cloud Chief formation, 11.5; Rush Springs formation, 29.7; Marlow, Dog Creek, and Blaine, 16.7; and Chickasha formation, 28.7. See description of hydrogeology and general geology map in reference listed under **AREA** section above, pages 69.7-8 and 9.

SURFACE DRAINAGE: Good, length of principal waterway 390 miles.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: **Precipitation:** Above Anadarko, Weather Bureau substations exist, but no data are presented. Between Anadarko and Chickasha (4th St.), see pages 69.2-1 and 69.4-1, in description for watersheds 200 and 400 in reference listed above under **AREA** section. Between Chickasha (4th St.) and Chickasha (Turnpike), 1 Weather Bureau substation plus 17 recording weighing type gages located on a 3-mile grid pattern. Between Chickasha (Turnpike) and Tabler, 1 Weather Bureau substation plus recording weighing type gages installed on a 3-mile square grid pattern oriented in north-northeast direction and consists of approximately 66 gages. All gages were in operation, with various time scales (primarily 24-hour). See footnotes under monthly and daily tables for more specific information. **Runoff:** Staff gage on north (left) bank of stream; Stevens A-35 water-level recorder and bubble gage servo-manometer on left bank with 4.8 inches per day time scale. Gage datum 1,005.88 ft., all datum m.s.l. elev., by 1929 adjustment. Sandy shifting channel control, very unstable. Low flow current meter measurements made by wading channel. High flow current meter measurements made from cableway. Measurements made periodically and during each major event.

WATERSHED CONDITIONS: Approximately 40% of the cultivated area is farmed with a rotation of alfalfa, small grains, and cotton. The remainder is farmed to small grains, cotton, and sorghums. There are some irrigated farms in the area. Most farmers in the area use a moldboard plow for land preparation and a spring-tooth or spike-tooth harrow for control of weeds until the following crops are planted. Fertilization is based on soil test recommendations. Approximately 95% of the area with slopes above 1- $\frac{1}{2}$ % have structural conservation practices such as terraces, farm ponds, and grassed waterways applied. There are approximately 5 farm ponds per sq. mile. The following table shows the land use:

Percent of watershed in										
Cultivation - 60						Pasture or range - 37		Wooded pasture - 1		Miscellaneous - 2
Percent of cultivated land in						Classification of range site condition based on production		Classification of range site condition based on production		Farmsteads, roads, airports, etc.
Alfalfa - 20	Sowed crops - 60			Row crops - 20						
Average yield ton/ac	Wheat yield bu/ac	Oats yield bu/ac	Barley yield bu/ac	Milo yield bu/ac	Cotton yield-lint lb/ac					
4.5	30	40	42	28	310	Exc. - 1% Good - 22% Fair - 69% Poor - 8%		Good - 20% Fair - 70% Poor - 10%		
						The general practice for good range utilization is 1 animal unit per 10 acres.				

GENERALLY REPRESENTS: Large Rivers of the Central Great Plains Winter Wheat and Range Region, specifically the Central Rolling Red Plains and Central Rolling Red Prairies, land resource areas (H-78 and H-80) with general application to the Cross Timbers land resource area (J-84) of the Southwestern Prairies Cotton and Forage Region.

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 600 NEAR TABLER										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.20	.37	1.91	3.08	1.41	2.86	3.11	1.00 .007	1.15 .040	.42 .012	2.75 .017	.72 .019	18.98			
STA AV 2/P Q																
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
MAXIMUMS FOR PERIOD OF RECORD 4/																
1963 TO	9-17	.0005	9-17	.0005	9-17	.0011	9-17	.003	9-17	.006	9-17	.010	9-17	.015	9-17	.030
1963	1963		1963		1963		1963		1963		1963		1963		1963	
Notes: Watershed conditions same as that described on previous page under <u>WATERSHED CONDITIONS</u> . For maps see pp. 69.7-7 and 9 in reference listed under the <u>AREA</u> section on previous page. 1/ Precipitation data based on a Thiessen weighted average of 73 gages for the reach between stations at Chickasha (4th St.) and Tabler. 2/ Precipitation record began Oct. 1961, however, reach length is to be changed, therefore, no station average is shown; runoff records began Aug. 1963. 3/ Mean P based on 63-yr (1901-63) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Aug. 1963, therefore, the maximum discharge and depths shown are probably not the annual maximums for 1963.																
MISCELLANEOUS DATA																
<u>RUNOFF PEAK DATA</u> : YEAR (1963): Incomplete																
PERIOD OF RECORD: Maximum — Sept. 17, 1963, 1,640 cfs (15.22 ft). Minimum — Sept. 15, 1963, 17.9 cfs (10.46 ft).																
PEAK DISCHARGES: (Above base of 3,000 cfs) 1963 — partial - none.																
<u>ABBREVIATED RATING TABLE</u> : 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
<u>GAUGE HEIGHT</u>								<u>DISCHARGE</u>								
10.50								20								
11.00								75								
11.30								140								
12.00								272								
13.00								550								
14.00								943								
15.00								1,500								

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA		WATERSHED 600 NEAR TABLER					
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.01	.00	.00	.33	.00	.00	.03	.00	.07	.00	
2	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00	
3	.00	.00	.00	.00	.00	.36	.00	.00	.09	.00	.02	.00	
4	.12	.00	.28	.00	.02	.00	.00	.00	.01	.00	.00	.00	
5	.07	.00	.00	.20	.05	.02	.00	.00	.05	.00	.00	.00	
6	.00	.00	.00	.02	.11	.00	.00	.00	.00	.00	.00	.00	
7	.00	.00	.00	.00	.00	.00	.02	.01	.00	.00	.00	.00	
8	.00	.00	.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
10	.00	.07	.50	.00	.00	.00	.45	.07	.00	.00	.00	.38	
11	.00	.00	.00	.00	.00	.14	.64	.00	.22	.00	.00	.26	
12	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	
13	.00	.00	.00	.00	.00	.00	1.05	.42	.00	.00	.00	.00	
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
15	.00	.00	.01	.00	.00	.00	.00	.00	.24	.00	.00	.00	
16	.00	.17	.00	.00	.00	.14	.00	.00	.03	.00	.00	.00	
17	.00	.01	.00	.21	.00	.03	.00	.00	.02	.00	.00	.00	
18	.00	.00	.00	.06	.00	.00	.00	.09	.00	.00	.02	.00	
19	.01	.00	.00	.00	.10	.00	.00	.00	.00	.00	1.94	.00	
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.36	.00	.00	
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.02	.03	
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.68	.00	
23	.00	.00	.00	.00	.00	1.84	.00	.00	.00	.00	.00	.00	
24	.00	.00	.00	.19	.00	.00	.00	.00	.00	.00	.00	.00	
25	.00	.00	.00	.00	.01	.00	.01	.01	.46	.00	.00	.00	
26	.00	.00	.00	2.36	.00	.00	.19	.00	.00	.00	.00	.00	
27	.00	.00	.00	.04	.00	.00	.28	.00	.00	.00	.00	.00	
28	.00	.12	.00	.00	.00	.00	.39	.01	.00	.00	.00	.00	
29	.00	-----	.00	.00	.00	.00	.08	.19	.00	.00	.00	.05	
30	.00	-----	.81	.00	.46	.00	.00	.04	.00	.00	.00	.00	
31	.00	-----	.00	-----	.57	-----	.00	.14	-----	.05	-----	.00	
TOTAL	.20	.37	1.91	3.08	1.41	2.86	3.11	1.00	1.15	.42	2.75	.72	
ST. AVE	1/												

NOTES: RECORDS BEGAN OCT 1, 1961. YEARLY PRECIPITATION 18.98 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 73 GAGES ON THE REACH BETWEEN STATIONS 400 AND 600. 1/BECAUSE OF THE ESTABLISHMENT OF STATION 500 ON JAN 1, 1964, NO STATION AVERAGE WILL BE PUBLISHED UNTIL 1964.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA		WATERSHED 600 NEAR TABLER					
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1								35	27	55	49	82	
2								33	27	* 51	40	69	
3								30	23	48	38	68	
4								30	* 22	44	37	67	
5								28	22	42	33	67	
6								* 25	125	40	34	67	
7								22	159	41	32	67	
8								21	96	40	38	65	
9								19	59	42	40	63	
10								19	42	40	40	66	
11								24	32	36	41	83	
12								22	28	32	40	85	
13								27	25	30	37	84	
14								27	21	32	* 39	69	
15								30	18	31	40	59	
16													
17							105	33	18	30	42	79	
18							185	39	* 432	* 29	43	85	
19							351	64	* 1160	48	44	73	
20							213	49	688	29	129	* 70	
							132	* 37	479	32	221	64	
21								89	35	356	36	120	65
22								65	36	264	39	137	77
23								53	35	212	39	158	75
24								* 41	31	178	38	117	88
25								37	26	152	38	103	106
26								37	25	126		92	98
27								40	24	103	127	* 86	102
28								95	22	78	103	95	103
29		-----						81	21	64	112	104	87
30		-----						70	22	56	97	95	87
31		-----						45	22	-----	* 68	-----	87
MEAN								30	170	49	72	78	
INCHES								.007	.040	.012	.017	.019	

NOTES: RECORDS BEGAN JULY 16, 1963. TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/Day, MULTIPLY BY .000007902. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 251,100. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

MONTHLY PRECIPITATION AND RUNOFF (inches)							CHICKASHA, OKLAHOMA WATERSHED 700 AT ALEX AREA—3,064,000 (4,787 SQ. MILES)									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1963	P 1/ Q	.22 .070	.37 .063	1.88 .069	3.14 .084	1.36 .044	2.93 .099	.034	.86 .006	1.13 .035	.28 .012	2.71 .016	.72 .020	.552		
STA AV	2/P Q	.076	.068	.070	.082	.088	.312	.068	.034	.120	.091	.117	.069	1.195		
MEAN P	3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-23	.0013	6-23	.0013	6-23	.0026	6-23	.007	6-23	.011	6-23	.015	6-23	.025	6-23	.060
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 61 to 1963	9-20 1962	.0032	9-20 1962	.0032	9-20 1962	.0063	9-20 1962	.019	9-20 1962	.035	9-20 1962	.057	9-20 1962	.097	6-8 1962	.240
NOTES: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962 USDA Misc.Pub.1070, p 69.7-1. For maps, see foregoing reference pp 69.7-7 and 9. 1/ Precipitation data based on a Thiessen weighted average of 84 gages on the reach between Chickasha (4th St.) and Alex prior to July 15, 1963; since July 15, 1963 a Thiessen weighted average of 21 gages on the reach between Tabler and Alex. 2/ Precipitation and Runoff records began Oct., 1961, however, because of a varied number of gages in operation for this period of record no STA AV P values are shown. 3/ Mean P based on 63-yr (1901-63) U. S. Weather Bureau record period at Chickasha, Okla; missing months estimated. 4/ Period of record began Oct., 1961																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1963): Maximum — June 23, 4,080 cfs (10.67 ft). Minimum — Aug. 13, 12.7 cfs (2.94 ft). PERIOD OF RECORD: Maximum — Sept. 20, 1962, 9,750 cfs (16.18 ft). Minimum — Aug. 13, 1963, 12.7 cfs (2.94 ft). PEAK DISCHARGES: (Above base of 3,000 cfs) 1963 — Apr. 27, 3,100 cfs (9.80 ft); June 23, 4,080 cfs (10.67ft.).																
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT		Jan. 1 - June 1 DISCHARGE			June 1 - Oct. 1 DISCHARGE			Oct. 1 - Dec. 1 DISCHARGE								
2.8		0														
4.0		178														
5.0		419						210			340					
6.0		910						600			680					
7.0		1,640						1,100								
8.0		1,960														
10.0		3,400														
12.0		5,200														
14.0		6,900														
16.0		9,200														

CLIMATOLOGICAL DATA APPLICABLE TO ENTIRE EXPERIMENTAL WATERSHED
(ANADARKO TO ALEX)

1963 DAILY AIR TEMPERATURE (degrees F)											CHICKASHA, OKLAHOMA						CHICKASHA EXPERIMENT STATION											
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC					
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN				
1	55	22	74	18	54	23	80	55	68	44	82	64	96	69	97	72	88	69	85	43	59	35	63	30				
2	56	27	70	18	65	33	77	64	67	53	84	66	97	70	96	72	93	69	91	46	61	26	59	27				
3	54	23	52	14	68	36	74	51	66	56	86	62	97	70	97	71	95	72	95	48	62	49	65	26				
4	51	41	65	30	68	43	65	43	82	65	90	67	99	71	98	69	98	70	95	48	78	48	62	27				
5	50	39	76	24	68	30	60	45	85	62	90	72	99	74	100	74	95	70	95	49	79	41	71	24				
6	53	27	74	31	55	26	66	47	83	54	92	72	97	75	101	74	98	66	95	50	79	38	67	32				
7	55	33	69	30	65	24	79	43	85	55	95	75	100	74	99	72	93	66	95	48	84	41	61	43				
8	67	28	57	28	72	24	88	51	88	65	93	73	100	72	97	75	97	66	94	49	78	53	50	33				
9	62	30	51	28	67	36	86	56	90	70	96	68	98	74	98	69	95	66	95	49	76	36	50	18				
10	57	27	49	38	60	33	91	59	101	71	99	74	97	74	98	75	97	65	92	47	79	39	50	39				
11	27	11	39	12	66	34	86	51	96	71	96	69	84	70	97	75	98	67	90	59	79	38	43	20				
12	15	0	43	16	68	43	73	43	90	69	93	67	92	73	100	74	85	68	92	52	74	40	33	14				
13	30	1	56	22	65	35	81	40	96	68	96	69	92	72	94	72	81	62	90	51	59	30	32	19				
14	41	7	49	21	56	30	89	53	91	67	99	76	89	69	86	62	84	58	87	59	57	26	31	10				
15	45	9	52	21	56	42	88	61	90	69	100	74	90	68	89	59	81	64	88	60	72	50	35	16				
16	52	17	47	21	74	44	93	66	94	71	98	62	96	69	93	62	81	68	86	58	82	62	43	29				
17	54	25	37	22	72	40	92	63	92	61	72	62	94	73	97	69	81	68	87	57	75	57	41	33				
18	50	21	56	25	86	44	88	67	92	66	86	63	95	74	96	71	84	61	87	59	65	27	38	13				
19	40	4	60	32	76	44	80	53	84	59	94	64	93	75	90	71	90	61	82	62	63	46	28	15				
20	40	4	74	24	67	35	89	51	95	52	90	64	100	75	92	57	87	62	81	63	68	44	29	21				
21	55	17	60	19	65	33	92	63	74	54	90	63	100	74	96	59	93	53	77	63	70	51	25	17				
22	54	22	55	15	76	30	88	70	69	50	92	71	99	74	99	67	90	61	84	59	66	40	22	16				
23	22	3	61	31	84	61	73	50	65	48	91	63	98	74	97	76	89	62	83	60	54	28	36	5				
24	30	2	70	23	82	56	68	50	63	49	91	70	99	74	103	76	89	57	81	68	57	29	60	20				
25	41	17	70	40	73	37	62	52	94	60	92	70	100	75	97	73	86	60	85	59	52	32	65	24				
26	38	18	60	23	85	44	62	52	100	70	93	70	90	69	101	72	80	55	84	51	54	35	61	30				
27	29	2	77	43	88	50	75	60	98	56	96	69	90	72	100	73	82	53	87	50	65	26	58	22				
28	35	2	75	33	91	66	76	63	89	62	97	71	88	70	100	76	87	53	81	51	59	26	48	27				
29	48	3	---	---	89	60	77	60	92	59	98	68	91	72	93	71	84	52	70	31	58	26	40	21				
30	38	15	---	---	80	61	76	50	86	65	99	76	91	69	91	69	79	40	84	55	58	29	34	20				
31	46	17	---	---	89	59	---	---	77	63	---	---	98	72	87	69	---	---	81	57	---	---	37	26				
AV.	45	17	60	25	72	40	79	54	85	61	92	68	95	72	96	70	89	62	87	54	67	38	46	23				
MEAN	30.7		42.5		56.2		66.8		73.0		80.2		83.6		83.2		75.4		70.4		52.8		34.8					
STA AV	49	25	57	30	64	37	75	49	82	59	89	66	94	70	94	75	86	62	76	51	63	36	53	29				
NOTES:	TEMPERATURE DATA ARE BASED ON CHICKASHA EXPERIMENT STATION RECORDS PUBLISHED IN U. S. WEATHER BUREAU CLIMATOLOGICAL DATA FOR OKLAHOMA, VOL. 72. STATION AVERAGE BASED ON RECORDS FROM JUNE 1953 THROUGH DEC. 1963.																											

1963 MONTHLY EVAPORATION AND WIND

MONTH	EVAPORATION (INCHES)	TOTAL WIND (MILES)
APRIL	9.25	---
MAY	10.60	---
JUNE	11.13	2610
JULY	11.65	2072
AUGUST	11.05	1555
SEPTEMBER	7.35	1383
OCTOBER	7.05	1726
NOVEMBER	---	2352

EVAPORATION DATA ARE BASED ON CHICKASHA EXPERIMENT STATION RECORDS PUBLISHED IN U. S. WEATHER BUREAU CLIMATOLOGICAL DATA FOR OKLAHOMA, VOL. 72.

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 700 AT ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.01	.00	.00	.30	.00	.00	.06	.00	.08	.00
2	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.36	.00	.00	.05	.00	.01	.00
4	.13	.00	.29	.00	.02	.00	.00	.00	.00	.00	.00	.00
5	.08	.00	.00	.20	.04	.01	.00	.00	.02	.00	.00	.00
6	.00	.00	.00	.02	.11	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00
8	.00	.00	.29	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.06	.50	.00	.00	.00	.40	.07	.00	.00	.00	.39
11	.00	.00	.00	.00	.00	.12	.67	.00	.20	.00	.00	.25
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.99	.48	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.02	.00	.00	.00	.00	.00	.24	.00	.00	.00
16	.00	.18	.00	.00	.00	.13	1.00	.00	.12	.00	.00	.00
17	.00	.01	.00	.19	.00	.03	.00	.00	.04	.00	.00	.00
18	.00	.00	.00	.09	.00	.00	.00	.02	.00	.00	.02	.00
19	.01	.00	.00	.00	.09	.00	.00	.00	.00	.00	2.03	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.23	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.03
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.57	.00
23	.00	.00	.00	.00	.00	1.98	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.18	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.01	.00	.02	.00	.39	.00	.00	.00
26	.00	.00	.00	2.42	.01	.00	.21	.00	.01	.00	.00	.00
27	.00	.00	.00	.04	.00	.00	.24	.00	.00	.00	.00	.00
28	.00	.12	.00	.00	.00	.00	.28	.00	.00	.00	.00	.00
29	.00	-----	.00	.00	.00	.00	.08	.26	.00	.00	.00	.05
30	.00	-----	.77	.00	.42	.00	.00	.00	.00	.00	.00	.00
31	.00	-----	.00	-----	.57	-----	.00	.03	-----	.04	-----	.00
TOTAL	.22	.37	1.88	3.14	1.36	2.93		.86	1.13	.28	2.71	.72
STA AV												

NOTES: ON JULY 16, 1963 STATION 600 WAS ESTABLISHED. 1/PRECIPITATION VALUES FOR PERIOD JAN 1, 1963 TO JULY 15, 1963 ARE A THIESSEN WEIGHTED AVERAGE OF 84 GAGES ON THE REACH BETWEEN STATIONS 400 AND 700. PRECIPITATION VALUES FOR PERIOD JULY 16, 1963 TO DEC 31, 1963 ARE A THIESSEN WEIGHTED AVERAGE OF 21 GAGES ON THE REACH BETWEEN STATIONS 600 AND 700. BECAUSE THE TWO PERIODS COVER DIFFERENT REACHES THERE ARE NO AMOUNTS SHOWN FOR STA AV OR THE MONTH OF JULY.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 700 AT ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	253	313	219	315	* 348	149	<u>412</u>	34	23	54	58	<u>140</u>
2	257	298	221	263	331	199	331	24	26	52	49	77
3	258	239	219	* 401	<u>406</u>	173	252	19	23	* 50	46	73
4	259	307	229	638	355	187	192	19	* <u>21</u>	47	45	72
5	266	* 271	* 231	483	306	200	144	19	21	43	43	72
6	265	260	227	409	264	240	116	* 19	60	40	43	73
7	* 259	255	242	379	237	164	102	<u>17</u>	127	40	<u>40</u>	72
8	256	248	380	355	221	140	160	19	95	41	45	70
9	251	243	430	325	204	167	80	18	66	38	48	69
10	247	245	361	310	213	182	* 76	19	50	32	49	72
11	237	273	<u>449</u>	289	216	* 321	143	23	39	33	49	84
12	224	331	385	272	185	392	127	20	34	33	49	81
13	144	344	361	259	176	438	100	21	31	32	47	78
14	<u>142</u>	<u>350</u>	337	245	162	392	352	23	26	31	* 46	<u>59</u>
15	160	347	327	237	* 149	293	196	24	22	* 30	46	59
16	235	337	333	229	140	262	130	28	25	33	48	81
17	195	343	323	* 226	130	222	138	25	168	33	49	87
18	181	342	315	259	121	193	272	<u>52</u>	* <u>1180</u>	30	49	79
19	359	* 342	* 302	225	116	176	201	49	650	<u>29</u>	102	* 72
20	410	341	280	204	111	140	136	* 39	459	29	<u>191</u>	76
21	262	330	262	194	108	119	101	31	293	34	118	62
22	* 227	320	254	188	101	<u>111</u>	72	33	236	36	107	89
23	257	303	248	181	<u>91</u>	* 1650	58	31	198	37	104	104
24	397	266	236	<u>177</u>	91	* 582	* 51	29	164	36	100	98
25	416	237	225	207	103	* 500	44	26	130	37	96	110
26	449	227	216	333	134	* <u>1960</u>	48	23	104	45	92	103
27	<u>556</u>	221	212	* <u>1630</u>	* 138	* <u>1280</u>	<u>43</u>	22	89	99	* 88	91
28	546	<u>213</u>	210	119	832	50	20	74	139	88	88	82
29	410	-----	<u>206</u>	485	106	623	109	20	62	<u>152</u>	96	91
30	340	-----	210	422	117	501	60	20	56	151	93	94
31	325	-----	385	-----	132	-----	44	21	-----	* 90	-----	94
MEAN	292	291	285	362	182	426	140	25	152	52	71	83
INCHES	.070	.063	.069	.084	.044	.099	.034	.006	.035	.012	.016	.020

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .000007768. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 255,300. YEARLY MEAN DISCHARGE, 195 CFS. YEARLY DISCHARGE, .552 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 611 NEAR ALEX AREA — 4,845 ACRES (7.57 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.12 .081	.44 .105	1.64 .128	2.87 .285	1.04 .120	3.46 .203	2.94 .008	1.12 .000	.60 .000	.06 .000	2.88 .015	.73 .000	17.90 .945			
STA AV 2/P Q	.26 .164	.68 .176	1.48 .172	2.24 .278	1.67 .102	4.76 .364	2.72 .070	.94 .036	2.52 .057	1.95 .118	2.63 .039	1.12 .156	22.97 1.732			
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-26	.1332	4-26	.0882	4-26	.1212	4-26	.171	4-26	.192	4-26	.197	4-26	.200	4-26	.217
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 61 TO 1963	4-26 1963	.1332	4-26 1963	.0882	4-26 1963	.1212	4-26 1963	.171	4-26 1963	.192	4-26 1963	.197	6-7 1962	.237	6-1 1962	.411
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc.Pub.1070, p. 69.8-1. For maps, see foregoing reference pp. 69.8-5 and 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 7 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Dec. 1961. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Dec. 1961.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1963): Maximum — Apr. 26, 658 cfs (2.53 ft). Minimum — June 21, no flow (.55 ft). PERIOD OF RECORD: Maximum — Apr. 26, 1963, 658 cfs (2.53 ft). Minimum — no flow. PEAK DISCHARGES: (Above base of 250 cfs) 1963 — Apr. 26, 658 cfs (2.53 ft); June 23, 539 cfs (4.66 ft).																
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
Prior to June 20, 1963								June 20, 1963 - Present								
GAGE HEIGHT				DISCHARGE				GAGE HEIGHT				DISCHARGE				
0.12				0				.46				0				
0.50				21.5				.70				.22				
1.00				83.6				.90				1.21				
1.50				187				1.20				5.09				
2.00				356				1.50				12.9				
2.50				638				2.00				37.6				
3.00				996				2.50				80.3				
								3.00				144				
								4.00				353				
								4.81				600				

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 611 NEAR ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.15	.00	.00	.00	.00	.10	.00
2	.00	.00	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.53	.00	.00	.01	.00	.01	.00
4	.11	.00	.43	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.01	.00	.00	.20	.04	.00	.00	.00	.01	.00	.00	.00
6	.00	.00	.00	.01	.17	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.28	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.06	.52	.00	.00	.00	.15	.00	.00	.00	.00	.36
11	.00	.00	.00	.00	.00	.00	.79	.00	.06	.00	.00	.27
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.94	.57	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.02	.00	.00	.00	.00	.00	.27	.00	.00	.00
16	.00	.22	.00	.00	.00	.19	.00	.00	.00	.00	.00	.00
17	.00	.01	.00	.10	.00	.07	.00	.00	.02	.00	.00	.00
18	.00	.00	.00	.10	.00	.00	.00	.02	.00	.00	.01	.00
19	.00	.00	.00	.00	.05	.00	.00	.01	.00	.00	2.15	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.61	.00
23	.00	.00	.00	.00	.00	2.52	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.03	.00	.23	.00	.00	.00
26	.00	.00	.00	2.39	.01	.00	.55	.00	.00	.00	.00	.00
27	.00	.00	.00	.02	.00	.00	.18	.00	.00	.00	.00	.00
28	.00	.15	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00
29	.00	-----	.00	.00	.00	.00	.00	.26	.00	.00	.00	.07
30	.00	-----	.39	.00	.24	.00	.00	.01	.00	.00	.00	.00
31	.00	-----	.00	-----	.41	-----	.00	.25	-----	.01	-----	.00
TOTAL	.12	.44	1.64	2.87	1.04	3.46	2.94	1.12	.60	.06	2.88	.73
STAAV	.26	.68	1.48	2.24	1.67	4.76	2.72	.94	2.52	1.95	2.63	1.12

NOTES: YEARLY PRECIPITATION 17.90 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 7 GAGES ON THE WATERSHED.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 611 NEAR ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.6	.7	1.2	1.0	.6	1.5	.0	.0	.0	.0	.0	.0
2	.7	.6	1.2	.9	.5	1.5	.0	.0	.0	.0	.0	.0
3	.9	.5	1.2	.7	.4	1.4	.0	.0	.0	.0	.0	.0
4	.9	.5	1.4	.6	.4	.6	.0	.0	.0	.0	.0	.0
5	.7	.6	.9	.9	.4	.6	.0	.0	.0	.0	.0	.0
6	.6	.6	.9	1.1	.4	.5	.0	.0	.0	.0	.0	.0
7	.5	.6	.9	.9	.4	.3	.0	.0	.0	.0	.0	.0
8	.4	.6	.9	.7	.4	.2	.0	.0	.0	.0	.0	.0
9	.4	.6	1.3	.7	.4	.2	.0	.0	.0	.0	.0	.0
10	.5	.6	1.4	.9	.5	.3	.0	.0	.0	.0	.0	.0
11	.6	.6	1.5	.9	.7	.4	.1	.0	.0	.0	.0	.0
12	.6	.6	.7	.7	.9	.4	.0	.0	.0	.0	.0	.0
13	.6	.6	.6	.6	1.0	.4 *	1.2	.0	.0	.0	.0	.0
14	.6	.6	.6	.6	1.2	.4	.4	.0	.0	.0	.0	.0
15	.6	.6	.6	.5	1.2	.3	.0	.0	.0	.0	.0	.0
16	.6	.7	.7	.4	1.2	.2	.0	.0	.0	.0	.0	.0
17	.6	.9	.9	.4	1.2	.2	.0	.0	.0	.0	.0	.0
18	.6	.9	.9	.7	1.0	.2	.0	.0	.0	.0	.0	.0
19	.5	.9	.9	.5	.9	.1	.0	.0	.0	.0	2.9	.0
20	.4	.7	.7	.4	.7	.1	.0	.0	.0	.0	.1	.0
21	.4	.6	.6	.3	.6	.0	.0	.0	.0	.0	.0	.0
22	.4	.7	.6	.2	.6	.0	.0	.0	.0	.0	.1	.0
23	.4	1.0	.6	.2	.7	3.1	.0	.0	.0	.0	.0	.0
24	.4	1.2	.5	.3	.9	.2	.0	.0	.0	.0	.0	.0
25	.4	1.2	.4	.4	1.2	.1	.0	.0	.0	.0	.0	.0
26	.4	1.2	.4	3.7	1.0	.1	.0	.0	.0	.0	.0	.0
27	.4	1.2	.4	.7	.9	.1	.0	.0	.0	.0	.0	.0
28	.4	1.2	.4	.7	.9	.1	.0	.0	.0	.0	.0	.0
29	.4	-----	.5	.6	.9	.0	.0	.0	.0	.0	.0	.0
30	.4	-----	.9	.6	1.0	.0	.0	.0	.0	.0	.0	.0
31	.5	-----	1.3	-----	1.3	-----	.0	.0	-----	.0	-----	.0
MEAN	.5	.8	.8	1.9	.8	1.4	.1	.0	.0	.0	.1	.0
INCHES	.081	.105	.126	.285	.120	.203	.008	.000	.000	.000	.015	.000

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .004913. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 403.7. YEARLY MEAN DISCHARGE, .5 CFS. YEARLY DISCHARGE, .945 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. *DISCHARGE MEASUREMENTS.

MONTHLY PRECIPITATION AND RUNOFF (inches)							CHICKASHA, OKLAHOMA WATERSHED 612 NEAR ALEX AREA — 563 ACRES (.88 SQ. MILES)							
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	P 1/	.16	.37	1.42	3.60	1.33	3.82	3.25	.80	.75	.05	2.71	.70	18.96
	Q	.127	.004	.008	.503	.013	.794	.106	.000	.000	.000	.000	.000	1.555
STA AV	2/P	.24	.67	1.52	3.18	1.62	5.10	3.08	.80	2.92	1.72	2.45	1.14	24.44
	Q	.391	.270	.256	.646	.110	.847	.144	.000	.264	.028	.002	.371	3.329
MEAN P	3/													
63 YR		1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-23	.4014	6-23	.3454	6-23	.5487	6-23	.733	6-23	.756	6-23	.756	6-23	.756	6-23	.785

MAXIMUMS FOR PERIOD OF RECORD 4/																
19 61 TO	6-23	.4014	6-23	.3454	6-23	.5487	6-23	.733	6-23	.756	6-23	.756	6-23	.756	6-23	.785
19 63	1963		1963		1963		1963		1963		1963		1963		1963	

Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.9-1. For maps, see foregoing reference pp. 69.8-5 and 69.7-7 and 9.

1/ Precipitation data obtained from a Thiessen weighted average of 2 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Dec. 1961. 3/ Mean P based on 63-yr (1901-63) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Dec. 1961.

MISCELLANEOUS DATA														
RUNOFF PEAK DATA: YEAR (1963: Maximum — June 23, 228 cfs (2.24 ft). Minimum — no flow (.14 ft).														
PERIOD OF RECORD: Maximum — June 23, 1963, 228 cfs (2.24 ft). Minimum — no flow (.14 ft).														
PEAK DISCHARGES: (Above base of 100 cfs) 1963 — Apr. 27, 199 cfs (2.02 ft); June 23, 228 cfs (2.24 ft).														
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).														
Jan. 1, 1963 - June 23, 1963							June 23, 1963 - Present							
GAGE HEIGHT DISCHARGE							GAGE HEIGHT DISCHARGE							
.19 .61							.60 .3							
.22 2.03							.80 1.6							
.32 8.6							1.20 7.5							
.42 15.9							1.60 23.4							
.52 28.9							2.20 85.6							
.72 40.6							2.50 131							
1.02 61.9														
1.52 105														
1.92 186														
2.42 264														

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 612 NEAR ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.15	.00	.00	.00	.00	.10	.00
2	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.50	.00	.00	.02	.00	.01	.00
4	.12	.00	.43	.00	.01	.00	.00	.00	.00	.00	.00	.00
5	.03	.00	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.01	.26	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.25	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.05	.51	.00	.00	.00	.14	.00	.00	.00	.00	.34
11	.00	.00	.00	.00	.00	.03	.61	.00	.28	.00	.00	.25
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	1.42	.61	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.02	.00	.00	.00	.00	.00	.25	.00	.00	.00
16	.00	.22	.00	.00	.00	.12	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.10	.00	.13	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.38	.00	.00	.00	.04	.00	.00	.04	.00
19	.01	.00	.00	.00	.06	.00	.00	.01	.00	.00	1.92	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.04
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.64	.00
23	.00	.00	.00	.00	.00	2.89	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00
26	.00	.00	.00	2.72	.00	.00	.62	.00	.00	.00	.00	.00
27	.00	.00	.00	.03	.00	.00	.28	.00	.00	.00	.00	.00
28	.00	.10	.00	.00	.00	.00	.16	.00	.00	.00	.00	.00
29	.00	-----	.00	.00	.00	.00	.02	.14	.00	.00	.00	.07
30	.00	-----	.21	.00	.29	.00	.00	.00	.00	.00	.00	.00
31	.00	-----	.00	-----	.58	-----	.00	.00	-----	.04	-----	.00
TOTAL	.16	.37	1.42	3.60	1.33	3.82	3.25	.80	.75	.05	2.71	.70
STA AV	.24	.67	1.52	3.18	1.62	5.10	3.08	.80	2.92	1.72	2.45	1.14

NOTES: YEARLY PRECIPITATION 18.96 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 2 GAGES ON THE WATERSHED.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 612 NEAR ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.4	.1	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
2	.4	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
3	.4	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0
4	.3	.0	.1	.0	.0	.0	.1	.0	.0	.0	.0	.0
5	.2	.0	.0	.1	.1	.0	.1	.0	.0	.0	.0	.0
6	.1	.0	.0	.1	.0	.0	.1	.0	.0	.0	.0	.0
7	.1	.0	.0	.1	.0	.0	.1	.0	.0	.0	.0	.0
8	.1	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
9	.1	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
10	.1	.0	.1	.0	.0	.0	.1	.0	.0	.0	.0	.0
11	.1	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
12	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.1	.0	.0	.0	.0	.0	.6	.0	.0	.0	.0	.0
14	.1	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
15	.1	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
16	.1	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
17	.1	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
18	.1	.0	.0	.1	.0	.0	.1	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.18	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
26	.0	.0	.0	.11	.0	.1	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.3	.0	.1	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.1	.0	.1	.0	.0	.0	.0	.0	.0
29	.0	-----	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
30	.0	-----	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0
31	.0	-----	.0	-----	.1	-----	.0	.0	-----	.0	-----	.0
MEAN	.1	.0	.0	.4	.0	.6	.1	.0	.0	.0	.0	.0
INCHES	.127	.000	.008	.503	.013	.794	.106	.000	.000	.000	.000	.000

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0428. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 46.92. YEARLY MEAN DISCHARGE, .10 CFS. YEARLY DISCHARGE, 1.555 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 111 NEAR ANADARKO AREA — 16,640 ACRES (26.0 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.07 .161	.32 .151	1.54 .169	2.31 .166	2.32 .123	1.94 .064	2.09 .065	1.03 .003	1.07 .002	.68 .004	2.91 .048	.79 .041	17.07 .997			
STA AV 2/P Q	.18	.60	1.12	2.21	3.24	5.18	2.56 .108	1.45 .044	2.84 .108	1.57 .048	2.45 .079	.94 .099	24.34			
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-26	.0086	4-26	.0080	4-26	.0135	4-26	.028	4-26	.034	4-26	.038	4-26	.043	4-25	.069
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 62 TO 1963	9-15 1962	.0471	9-15 1962	.0361	9-15 1962	.0670	9-15 1962	.118	9-15 1962	.126	9-15 1962	.128	9-15 1962	.132	9-15 1962	.170
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.10-1. For maps, see foregoing reference pp. 69.7-7 and 9 and 69.10-4. 1/ Precipitation data obtained from a Thiessen weighted average of 6 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began July 1962. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began July 1962.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1963): Maximum — Apr. 26, 145 cfs (9.09 ft). Minimum — no flow (6.50 ft). PERIOD OF RECORD: Maximum — Sept. 15, 1962, 790 cfs E (11.17 ft). Minimum — no flow (6.50 ft). PEAK DISCHARGES: (Above base of 400 cfs) 1963 — none.																
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
Jan. 1 - Aug. 10								Aug. 10 - Dec. 31								
GAGE HEIGHT				DISCHARGE				GAGE HEIGHT				DISCHARGE				
6.50				.0				1.00				.0				
6.80				.4				1.30				.52				
7.00				1.8				1.40				1.1				
7.50				5.0				1.50				2.0				
8.00				35				1.70				4.9				
9.00				100				1.90				9.5				
10.00				315				2.10				16				
11.00				700				2.40				31				

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 111 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.01	.00	.00	.45	.00	.00	.03	.00	.06	.00
2	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.55	.00	.00	.00	.00	.06	.00
4	.06	.00	.45	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.01	.00	.00	.21	.07	.00	.00	.00	.04	.00	.00	.00
6	.00	.00	.00	.02	.00	.00	.00	.00	.07	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.26	.00	.00	.01	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.03	.00	.04	.00	.00	.00	.00
10	.00	.10	.22	.00	.00	.00	.18	.03	.00	.00	.00	.49
11	.00	.00	.00	.00	.00	.58	.26	.00	.03	.00	.00	.22
12	.00	.00	.00	.00	.00	.00	.01	.01	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.93	.41	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.23	.00	.00	.00
16	.00	.15	.00	.00	.00	.00	.00	.00	.12	.00	.00	.00
17	.00	.00	.00	.22	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.19	.00	.00	.05	.00
19	.00	.00	.00	.00	.19	.00	.00	.00	.00	.00	1.91	.00
20	.00	.00	.00	.00	.01	.00	.00	.00	.00	.43	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.12	.21	.02
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.62	.00
23	.00	.00	.00	.00	.00	.32	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.22	.00	.00	.00	.55	.00	.00	.00
26	.00	.00	.00	1.71	.00	.00	.26	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.19	.00	.00	.00	.00	.00
28	.00	.07	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00
29	.00	-----	.01	.00	.00	.00	.05	.17	.00	.00	.00	.06
30	.00	-----	.59	.00	.69	.00	.00	.12	.00	.00	.00	.00
31	.00	-----	.00	-----	1.05	-----	.00	.06	-----	.13	-----	.00
TOTAL	.07	.32	1.54	2.31	2.32	1.94	2.09	1.03	1.07	.68	2.91	.79
STAAV	.18	.60	1.12	2.21	3.24	5.18	2.56	1.45	2.84	1.57	2.45	.94

NOTES: YEARLY PRECIPITATION 17.07 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 6 GAGES ON THE WATERSHED.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 111 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	3.7	* 4.0	3.8	3.8	2.8	2.5	<u>2.3</u>	<u>2.4</u>	<u>2.0</u>	<u>2.0</u>	<u>2.3</u>	1.0
2	3.7	3.9	3.8	3.7	3.0	1.8	.3	.4	.0	.0	.4	.9
3	* 3.6	4.0	3.7	3.6	3.0	<u>2.7</u>	.3	.4	.0	.0	.4	.9
4	3.7	3.8	4.5	3.5	2.8	2.2	.3	.4	.0	.0	.5	* 1.0
5	3.7	3.8	4.0	3.7	2.9	1.9	* .3	.3	.0	.0	* .5	1.1
6	3.6	3.8	3.7	3.8	2.9	* 1.9	.3	.3	.0	.0	.5	1.2
7	3.6	3.8	3.7	3.5	2.9	1.9	.3	.2	.0	.0	.5	1.1
8	3.6	3.8	3.7	3.4	2.7	1.9	.3	<u>2.0</u>	.0	.0	.5	.7
9	3.6	3.8	4.2	3.3	* 2.7	1.8	.4	.0	.0	.0	.7	.7
10	3.6	3.9	4.1	3.2	2.7	1.7	.5	.0	.0	.0	.8	1.3
11	3.4	4.0	4.4	* 3.1	2.6	1.7	.5	.0	.0	.0	.7	1.2
12	3.5	<u>4.2</u>	3.9	3.1	2.5	2.3	.6	.0	.0	.0	.7	.7
13	3.3	* 3.9	3.7	3.0	2.5	1.9	1.3	.0	.0	.0	.7	.5
14	3.5	3.7	* 3.7	3.0	2.4	1.9	1.3	.0	.0	.0	.6	.5
15	4.1	3.5	3.7	3.1	2.2	1.8	.6	.0	.0	.0	.7	.6
16	* 4.1	3.6	3.6	3.1	2.2	1.7	.5	.0	.1	.0	.9	.9
17	3.8	3.8	3.6	3.0	<u>2.1</u>	* 1.7	.5	.0	<u>2.2</u>	.0	.9	* 1.3
18	3.0	3.8	3.7	3.1	2.1	1.6	* .4	.0	.2	.0	.9	1.2
19	3.3	3.7	3.7	<u>2.5</u>	2.3	1.5	.4	.0	.2	.0	* <u>8.5</u>	.8
20	<u>4.2</u>	3.6	<u>3.5</u>	2.5	2.4	1.5	.4	.0	.0	.0	1.1	1.0
21	3.7	3.7	3.5	2.5	2.3	1.4	.4	.0	.0	.2	.7	.6
22	<u>2.8</u>	4.0	3.6	2.5	2.2	1.3	.4	.0	* .1	.3	* 4.0	.4
23	3.2	3.6	3.6	2.5	* 2.3	1.2	<u>1.6</u>	.0	.1	.3	1.0	<u>2.3</u>
24	3.1	<u>3.4</u>	3.6	2.5	2.4	.6	16	.0	.1	.3	1.0	.3
25	3.9	<u>3.4</u>	3.6	* 2.7	2.4	.5	.4	.0	.1	<u>2.4</u>	.9	.6
26	4.2	3.4	3.5	* <u>2.2</u>	2.5	.5	.4	.0	.1	.4	.9	1.0
27	4.0	* 3.5	* 3.5	7.1	2.1	.5	.4	.0	.1	.3	1.0	1.3
28	3.6	3.7	4.0	3.4	2.1	.4	.5	.0	.1	.2	1.0	<u>1.5</u>
29	4.0	-----	3.7	2.9	2.1	<u>2.3</u>	* .5	.0	.0	.2	.9	1.4
30	3.5	-----	3.7	2.7	2.8	<u>2.3</u>	.4	.0	.0	.2	1.0	1.4
31	<u>4.0</u>	-----	<u>4.7</u>	-----	1.1	-----	.4	.0	-----	.2	-----	1.4
MEAN	3.6	3.8	3.8	3.9	2.8	1.5	1.5	.1	.0	.1	1.1	.9
INCHES	.161	.151	.169	.166	.123	.064	.065	.003	.002	.004	.048	.041

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .001430. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 1.387. YEARLY MEAN DISCHARGE, 1.9 CFS. YEARLY DISCHARGE, .997 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 131 NEAR ANADARKO AREA — 25,660 ACRES (40.1 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.11 .149	.39 .137	1.66 .141	2.46 .172	2.09 .062	2.47 .032	2.96 .005	.99 .000	1.32 .000	.55 .000	3.17 .002	.82 .005	18.99 .705			
STA AV 2/P Q	.23	.70	1.18	2.34	2.60	5.18	2.96	1.16	3.44 .038	1.69 .031	2.78 .050	.98 .072	25.24			
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-26	.0071	4-26	.0069	4-26	.0132	4-26	.030	4-26	.042	4-26	.052	4-26	.062	4-26	.088
MAXIMUMS FOR PERIOD OF RECORD 4/																
1962 TO 1963	4-26 1963	.0071	4-26 1963	.0069	4-26 1963	.0132	4-26 1963	.030	4-26 1963	.042	4-26 1963	.052	4-26 1963	.062	4-26 1963	.088
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.11-1. For maps, see foregoing reference pp. 69.7-7 and 9 and 69.11-4. 1/ Precipitation data obtained from a Thiessen weighted average of 10 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Sept. 1962. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Sept. 1962.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1963): Maximum — Apr. 26, 185 cfs (11.58 ft). Minimum — no flow (7.18 ft). PERIOD OF RECORD: Maximum — Apr. 26, 1963, 185 cfs (11.58 ft). Minimum — no flow (7.18 ft). PEAK DISCHARGES: (Above base of 400 cfs) 1963 — none.																
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
Jan. 1 - July 22								July 22 - Dec. 31								
GAGE HEIGHT				DISCHARGE				GAGE HEIGHT				DISCHARGE				
7.30				.3				1.00				0				
7.50				1.2				1.30				.46				
8.00				6.6				1.50				1.47				
9.00				31				1.70				3.52				
10.00				75				2.00				10.0				
11.00				140				2.50				30.0				
12.00				224				3.00				65.0				
								3.50				120				

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 131 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.01	.00	.00	.45	.00	.00	.00	.00	.06	.00
2	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.30	.00	.00	.01	.00	.00	.00
4	.07	.00	.46	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.02	.00	.00	.24	.05	.02	.00	.00	.07	.00	.00	.00
6	.00	.00	.00	.01	.10	.00	.00	.00	.06	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.05	.17	.00	.00	.00	.00
8	.00	.00	.33	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.08	.24	.00	.00	.00	.44	.00	.00	.00	.00	.46
11	.00	.00	.00	.00	.00	.39	.32	.00	.11	.00	.00	.26
12	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	1.56	.37	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.23	.00	.00	.00
16	.00	.20	.01	.00	.00	.01	.00	.00	.07	.00	.00	.00
17	.00	.01	.00	.06	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.16	.00	.00	.03	.00
19	.02	.00	.00	.00	.17	.00	.00	.02	.00	.00	2.07	.00
20	.00	.00	.00	.00	.01	.00	.00	.00	.00	.40	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.16	.03
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	.00
23	.00	.00	.00	.00	.00	1.30	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.13	.00	.05	.00	.77	.00	.00	.00
26	.00	.00	.00	2.02	.00	.00	.16	.00	.00	.00	.00	.00
27	.00	.00	.00	.03	.00	.00	.15	.00	.00	.00	.00	.00
28	.00	.10	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.02	.16	.00	.00	.00	.07
30	.00	.00	.61	.00	.00	.00	.00	.07	.00	.00	.00	.00
31	.00	.00	.00	.00	1.05	.00	.00	.02	.00	.10	.00	.00
TOTAL	.11	.39	1.66	2.46	2.09	2.47	2.96	.99	1.32	.55	3.17	.82
STAAV	.23	.70	1.18	2.34	2.60	5.18	2.96	1.16	3.44	1.69	2.78	.98

NOTES: YEARLY PRECIPITATION 18.99 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 10 GAGES ON THE WATERSHED.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 131 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	4.5	* 5.9	4.6	6.6	4.4	6.7	.0	.0	.0	.0	.0	.0
2	4.5	5.9	4.0	5.8	4.4	2.8	.0	.0	.0	.0	.0	.0
3	* 4.4	5.3	4.1	5.2	4.3	2.6	.0	.0	.0	.0	.0	.0
4	4.7	5.5	8.3	4.8	3.6	1.7	.0	.0	.0	.0	.0	.0
5	4.9	5.7	6.6	5.4	3.2	1.0	.0	.0	.0	.0	.0	.0
6	4.7	5.7	4.9	6.8	3.7	* .8	.0	.0	.0	.0	.0	.0
7	4.5	5.6	4.5	5.7	3.7	.6	.0	.0	.0	.0	.0	.0
8	4.3	5.6	4.7	5.2	3.2	.6	.0	.0	.0	.0	.0	.0
9	4.3	5.6	8.4	4.7	* 2.6	.7	.0	.0	.0	.0	.0	.0
10	4.3	5.7	7.3	4.5	2.1	.6	.0	.0	.0	.0	.0	.1
11	4.5	5.5	9.2	* 4.2	1.8	.6	.1	.0	.0	.0	.0	.4
12	5.0	5.5	5.9	4.0	1.7	1.4	.0	.0	.0	.0	.0	.1
13	4.5	* 5.5	4.5	3.8	1.6	.7	2.2	.0	.0	.0	.0	.0
14	4.9	5.4	* 4.3	3.7	1.4	.6	1.6	.0	.0	.0	.0	.0
15	5.2	5.3	4.4	3.6	1.2	.5	.3	.0	.0	.0	.0	.0
16	* 5.6	5.5	4.3	3.5	1.1	.4	.3	.0	.0	.0	.0	.3
17	6.0	5.8	3.8	3.5	.9	* .3	.3	.0	.0	.0	.0	* .4
18	6.5	5.9	3.9	3.6	.8	.4	.2	.0	.0	.0	.0	.2
19	5.8	5.2	3.7	3.1	.8	.3	.2	.0	.0	.0	1.2	.1
20	4.9	4.9	3.6	3.0	1.3	.3	.1	.0	.0	.0	.3	.3
21	5.6	4.5	3.8	2.7	1.1	.2	.1	.0	.0	.0	.0	.2
22	6.1	4.6	3.6	2.6	1.0	.2	.0	.0	.0	.0	* .8	.1
23	5.9	4.9	3.5	2.4	* 1.2	7.6	.0	.0	.0	.0	.1	.1
24	4.7	4.6	3.8	2.5	1.3	1.7	.0	.0	.0	.0	.0	.2
25	5.1	4.4	3.6	* 3.0	1.2	.5	.0	.0	.0	.0	.0	.5
26	5.7	4.5	3.1	* 3.2	1.4	.3	.0	.0	.0	.0	.0	.5
27	5.5	* 4.6	* 3.4	* .30	.9	.2	.0	.0	.0	.0	.0	.3
28	5.1	4.7	3.4	9.1	.9	.1	.0	.0	.0	.0	.0	.5
29	5.8	-----	3.4	6.1	.8	.0	.0	.0	.0	.0	.0	.4
30	7.1	-----	4.3	4.5	1.6	.0	.0	.0	.0	.0	.0	.6
31	6.6	-----	1.1	-----	* 7.2	-----	.0	.0	.0	.0	-----	.5
MEAN	5.2	5.3	4.9	6.2	2.2	1.1	.2	.0	.0	.0	.1	.2
INCHES	.149	.137	.141	.172	.062	.032	.005	.000	.000	.000	.002	.005

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0009276. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 2,138. YEARLY MEAN DISCHARGE, 2.1 CFS. YEARLY DISCHARGE, .705 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

MONTHLY PRECIPITATION AND RUNOFF (inches)							CHICKASHA, OKLAHOMA WATERSHED 411 AT CHICKASHA AREA — 34,180 ACRES (53.4 SQ. MILES)							
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	P 1/	.24	.38	1.60	2.61	1.79	3.08	3.19	.95	1.24	.39	2.81	.76	19.04
	Q	.014	.022	.028	.118	.003	.113	.037	.000	.000	.000	.002	.000	.337
STA AV	2/P	.26	.65	1.25	2.20	2.34	5.23	2.84	.96	3.38	1.45	2.62	1.04	24.22
	Q									.062	.001	.005	.024	
MEAN P	3/													
63 YR		1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	6-23	.0126	6-23	.0121	6-23	.0231	6-23	.049	6-23	.065	6-23	.095	6-23	.103	6-23	.106

MAXIMUMS FOR PERIOD OF RECORD 4/																
19 62 TO	9-20	.0138	9-20	.0134	9-20	.0263	9-20	.063	9-20	.074	6-23	.095	6-23	.103	9-20	.121
19 63	1962		1962		1962		1962		1962		1963		1963		1962	

Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.12-1. For maps, see foregoing reference pp. 69.7-7 and 9 and 69.12-4.
1/ Precipitation data obtained from a Thiessen weighted average of 13 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Sept. 1962. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Sept. 1962.

MISCELLANEOUS DATA														
RUNOFF PEAK DATA: YEAR (1963): Maximum — June 23, 436 cfs (14.55 ft). Minimum — no flow (7.70 ft). PERIOD OF RECORD: Maximum — Sept. 20, 1962, 478 cfs (16.18 ft). Minimum — no flow (7.70 ft). PEAK DISCHARGES: (Above base of 400 cfs) 1963 — Apr. 26, 422 cfs (14.46 ft). June 23, 436 cfs (14.55 ft).														
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).														
GAGE HEIGHT					DISCHARGE									
8.00										.6				
8.50										3.5				
9.00										9.6				
10.00										32				
11.00										67				
12.00										117				
14.00										259				
16.00										460				

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 411 AT CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.01	.00	.00	.36	.00	.00	.00	.00	.07	.00
2	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.24	.00	.00	.09	.00	.03	.00
4	.11	.00	.32	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.12	.00	.00	.23	.05	.00	.00	.00	.03	.00	.00	.00
6	.00	.00	.00	.01	.34	.00	.00	.00	.01	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.28	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.06	.33	.00	.00	.00	.60	.13	.00	.00	.00	.41
11	.00	.00	.00	.00	.00	.19	.35	.00	.17	.00	.00	.26
12	.00	.00	.00	.00	.00	.00	.00	.03	.01	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	1.47	.34	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.02	.00	.00	.00	.00	.00	.26	.00	.00	.00
16	.00	.19	.00	.00	.00	.03	.00	.00	.05	.00	.00	.00
17	.00	.01	.00	.02	.00	.02	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.01	.00	.00	.00	.13	.00	.00	.01	.00
19	.01	.00	.00	.00	.07	.00	.00	.01	.00	.00	1.94	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.31	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.04	.02
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.72	.00
23	.00	.00	.00	.00	.00	2.24	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.11	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.07	.00	.02	.00	.62	.00	.00	.00
26	.00	.00	.00	2.18	.00	.00	.10	.00	.00	.00	.00	.00
27	.00	.00	.00	.35	.00	.00	.20	.00	.00	.00	.00	.00
28	.00	.12	.00	.00	.00	.00	.38	.01	.00	.00	.00	.00
29	.00	-----	.00	.00	.00	.00	.07	.18	.00	.00	.00	.07
30	.00	-----	.54	.00	.34	.00	.00	.00	.00	.00	.00	.00
31	.00	-----	.04	-----	.86	-----	.00	.12	-----	.06	-----	.00
TOTAL	.24	.38	1.60	2.61	1.79	3.08	3.19	.95	1.24	.39	2.81	.75
STAAV	.26	.65	1.25	2.20	2.34	5.23	2.84	.96	3.38	1.45	2.62	1.04

NOTES: YEARLY PRECIPITATION 19.04 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 12 GAGES ON THE WATERSHED.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 411 AT CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.9	* 1.4	1.0	2.9	.5	8.0	.0	.0	.0	.0	.0	.0
2	.9	1.9	1.3	1.4	.5	.7	.0	.0	.0	.0	.0	.0
3	* .9	1.1	1.2	1.1	.5	.2	.0	.0	.0	.0	.0	.0
4	.9	1.2	1.5	.7	.5	.0	.0	.0	.0	.0	.0	.0
5	1.2	1.3	2.8	.8	.4	.0	.0	.0	.0	.0	.0	.0
6	1.1	1.2	1.6	1.4	.4	.0	.0	.0	.0	.0	.0	.0
7	1.0	1.3	1.0	1.6	.4	.0	.0	.0	.0	.0	.0	.0
8	1.0	1.2	1.0	1.2	.4	.0	.0	.0	.0	.0	.0	.0
9	1.0	1.2	1.8	1.0	* .3	.0	.0	.0	.0	.0	.0	.0
10	.9	1.3	2.9	.8	.2	.0	.0	.0	.0	.0	.0	.2
11	.6	1.0	4.7	* .6	.1	.0	.1	.0	.0	.0	.0	.2
12	.2	.9	2.7	.5	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	1.0	1.2	.4	.0	.0	* .39	.0	.0	.0	.0	.0
14	.0	* 1.2	.8	.4	.0	.0	14	.0	.0	.0	.0	.0
15	.2	.9	* .9	.4	.0	.0	.6	.0	.0	.0	.0	.0
16	.5	1.0	1.1	.4	.0	.0	.0	.0	.0	.0	.0	.0
17	* .6	1.2	.9	.3	.0	.0	.0	.0	.0	.0	.0	.1
18	.6	1.7	.8	.3	.0	.0	.0	.0	.0	.0	.0	.0
19	.3	1.8	.8	.3	.0	.0	.0	.0	.0	.0	1.4	.0
20	.5	1.3	.6	.1	.0	.0	.0	.0	.0	.0	.0	.0
21	.4	.9	.5	.1	.0	.0	.0	.0	.0	.0	.1	.0
22	.8	.6	.5	.0	.0	.0	.0	.0	.0	.0	.5	.0
23	.5	.9	.5	.0	.0	* 121	.0	.0	.0	.0	.6	.0
24	.4	1.0	.5	.0	.0	32	.0	.0	.0	.0	.0	.0
25	.4	* .9	.6	.1	.0	.9	.0	.0	.0	.0	.0	.0
26	.5	.7	.6	79	.0	.2	.0	.0	.0	.0	.0	.0
27	.6	.8	* .6	67	.0	.0	.0	.0	.0	.0	.0	.0
28	.6	.9	.6	4.6	.0	.0	.0	.0	.0	.0	.0	.0
29	.7	-----	.6	1.7	.0	.0	.0	.0	.0	.0	.0	.0
30	.8	-----	1.2	.8	.0	.0	.0	.0	.0	.0	.0	.0
31	.8	-----	4.0	-----	.4	-----	.0	.0	-----	.0	-----	.0
MEAN	.6	1.1	1.3	5.7	.1	5.4	1.7	.0	.0	.0	.1	.0
INCHES	.014	.022	.028	.118	.003	.113	.037	.000	.000	.000	.002	.000

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0006964. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 2.848. YEARLY MEAN DISCHARGE, 1.3 CFS. YEARLY DISCHARGE, .337 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA OKLAHOMA WATERSHED 511 NEAR TABLER AREA — 38,910 ACRES (60.8 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.30 .098	.36 .089	2.55 .159	3.42 .513	1.15 .079	3.18 .219	3.23 .064	.85 .004	1.40 .003	.58 .003	2.59 .035	.76 .031	20.37 1.297			
STA AV 2/P 0	.38	.64	1.87	2.69	1.89	5.25	2.32	1.38	2.86	1.46	2.61 .066	1.06 .088	24.41			
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	4-26	.0370	4-26	.0364	4-26	.0691	4-26	.199	4-26	.322	4-26	.383	4-26	.408	4-24	.458
MAXIMUMS FOR PERIOD OF RECORD																
19 63 TO	4-26	.0370	4-26	.0364	4-26	.0691	4-26	.199	4-26	.322	4-26	.383	4-26	.408	4-24	.458
19 64	1963		1963		1963		1963		1963		1963		1963		1963	
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc.Pub.1070, p. 69.13-1. For maps, see foregoing reference pp. 69.7-7 and 9 and 69.13-4. 1/ Precipitation data obtained from a Thiessen weighted average of 15 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Nov. 1962. 3/ Mean P based on 63-yr (1901-63) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Nov. 1962.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1963): Maximum — Apr. 26, 1,450 cfs (17.66 ft). Minimum — no flow (1.17 ft). PERIOD OF RECORD: Maximum — Apr. 26, 1963, 1,450 cfs (17.66 ft). Minimum — no flow (1.17 ft). PEAK DISCHARGES: (Above base of 600 cfs) 1963 — Apr. 26, 1,450 cfs (17.66 ft); June 23, 1,210 cfs (9.62 ft)																
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
Jan. 1 - May 14								May 14 - Dec. 31								
GAGE HEIGHT				DISCHARGE				GAGE HEIGHT				DISCHARGE				
7.00				2.5				1.22				.2				
8.00				30				1.80				7.0				
9.00				110				2.50				37				
10.00				300				3.50				125				
11.00				422				4.50				245				
13.00				690				6.50				581				
15.00				1,000				8.50				960				
17.00				1,330				10.00				1,300				

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 511 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.18	.00	.00	.08	.00	.05	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.21	.00	.00	.14	.00	.03	.00
4	.17	.00	.28	.00	.08	.00	.00	.00	.02	.00	.00	.00
5	.12	.00	.00	.23	.00	.00	.00	.00	.10	.00	.00	.00
6	.00	.00	.00	.03	.02	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
8	.00	.00	.26	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.05	.53	.00	.00	.00	.16	.00	.00	.00	.00	.47
11	.00	.00	.00	.00	.00	.06	.91	.00	.39	.00	.00	.23
12	.00	.00	.00	.00	.00	.00	.00	.03	.01	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.32	.37	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.17	.00	.00	.00
16	.00	.18	.00	.00	.00	.19	.00	.00	.05	.00	.00	.00
17	.00	.00	.00	.03	.00	.01	.00	.00	.03	.00	.00	.00
18	.00	.00	.01	.02	.00	.00	.00	.13	.00	.00	.01	.00
19	.01	.00	.00	.00	.11	.00	.00	.00	.00	.00	1.83	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.51	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.67	.00
23	.00	.00	.00	.00	.00	2.53	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.73	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.02	.00	.00	.00	.00	.41	.00	.00	.00
26	.00	.00	.00	2.36	.00	.00	.09	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.80	.00	.00	.00	.00	.00
28	.00	.13	.00	.00	.00	.00	.77	.05	.00	.00	.00	.00
29	.00	-----	.00	.00	.00	.00	.18	.26	.00	.00	.00	.04
30	.00	-----	1.46	.00	.18	.00	.00	.00	.00	.00	.00	.00
31	.00	-----	.01	-----	.68	-----	.00	.00	-----	.07	-----	.00
TOTAL	.30	.36	2.55	3.42	1.15	3.18	3.23	.85	1.40	.58	2.59	.76
STA AV	.38	.54	1.87	2.69	1.89	5.25	2.32	1.38	2.86	1.46	2.61	1.06

NOTES: YEARLY PRECIPITATION 20.37 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 15 GAGES ON THE WATERSHED.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 511 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	5.4	4.7	4.5	12	7.9	13	1.2	<u>1.2</u>	.1	<u>.1</u>	<u>.3</u>	1.8
2	* 5.4	5.6	5.2	9.9	8.3	4.8	1.0	.8	.1	.1	.3	1.6
3	5.5	5.9	4.5	7.5	<u>8.7</u>	4.6	* .8	.6	.1	.1	.3	1.6
4	5.9	4.8	5.8	6.0	7.8	3.9	.8	.5	.1	.1	.4	1.6
5	6.0	4.9	5.4	6.1	7.5	* 2.4	.7	.3	.1	.1	.4	* 1.6
6	5.6	5.0	4.6	6.1	7.6	1.6	.6	.2	.1	.1	.4	1.6
7	5.1	6.3	4.5	5.7	7.2	1.3	.6	.1	.2	.1	.4	1.5
8	5.1	6.1	4.6	6.0	* 6.9	1.0	.5	.2	.1	.1	.3	1.4
9	5.1	5.1	5.2	* 7.7	5.5	1.0	.5	.2	.1	.1	.3	1.5
10	5.0	5.0	6.7	5.0	4.7	.8	.5	.2	.1	.1	.3	<u>1.9</u>
11	4.6	4.9	12	4.5	4.4	.8	1.9	.2	* .0	.1	.3	1.9
12	4.7	* 6.1	6.6	4.4	3.9	.7	2.4	.1	.1	.1	.3	1.7
13	5.3	6.0	4.9	4.2	3.5	.9	1.5	.3	.1	.1	.3	1.5
14	5.3	4.3	* 4.6	4.3	3.1	1.1	2.7	.2	.1	.1	.3	1.4
15	* 5.4	4.4	4.8	<u>4.0</u>	3.3	1.5	1.1	.2	.1	.1	.3	1.7
16	5.1	<u>7.7</u>	4.9	4.8	3.3	1.5	.9	.1	.4	.1	.3	1.9
17	5.2	6.0	4.7	4.0	3.0	1.2	.6	.1	<u>.5</u>	.1	.3	1.8
18	5.2	5.4	4.8	4.1	2.7	* 1.1	.4	.1	.4	.1	.3	<u>1.1</u>
19	5.7	5.4	4.8	4.2	2.8	.9	* .7	.1	.4	.1	<u>9.0</u>	1.5
20	6.4	5.2	4.5	4.3	3.1	.7	.4	.1	.2	.4	<u>8.0</u>	1.7
21	<u>6.7</u>	4.8	4.4	4.3	2.9	.7	.5	.1	.2	<u>.5</u>	2.6	1.3
22	5.9	5.1	4.3	4.3	* 2.5	<u>.6</u>	.6	.1	.1	.3	5.3	1.3
23	6.1	4.4	3.8	4.3	2.0	* <u>2.85</u>	.6	.1	.1	.3	4.6	1.4
24	5.3	4.6	4.4	* 20	2.2	* <u>13</u>	<u>.3</u>	<u>.0</u>	.1	.2	2.1	1.6
25	4.6	4.4	4.1	16	2.2	4.2	.5	.0	.2	.2	1.6	1.9
26	4.2	<u>4.1</u>	* <u>3.0</u>	* <u>3.21</u>	2.1	2.5	.5	.0	.2	.2	1.5	* 1.9
27	3.5	4.1	3.5	305	1.7	2.5	.3	.0	.2	.2	1.4	1.9
28	<u>3.3</u>	* 4.4	3.5	27	<u>1.5</u>	1.9	* <u>5.9</u>	.0	.2	.2	1.8	1.9
29	* 4.0	-----	3.9	12	1.5	1.4	8.8	.1	.1	.2	7.4	1.8
30	5.0	-----	36	8.8	1.6	1.4	11	.1	.1	.2	6.6	1.8
31	4.7	-----	81	-----	3.5	-----	2.2	.1	-----	.2	-----	1.8
MEAN	5.2	5.2	8.4	28	4.2	12	3.4	.2	.2	.2	1.9	1.6
INCHES	.098	.089	.159	.513	.079	.219	.064	.004	.003	.003	.035	.031

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0006117. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 3,242. YEARLY MEAN DISCHARGE, 5.8 CFS. YEARLY DISCHARGE 1.297 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

CHICKASHA, OKLAHOMA WATERSHED 110 NEAR ANADARKO

LOCATION: WATERSHED — Tonkawa Creek Watershed above county road east-northeast of Anadarko, in Caddo County, Okla.; tributary to Washita River; Red River Basin.

GAGING STATION — NE $\frac{1}{4}$ sec. 18, T. 7 N., R. 9 W., lat. 35°05', long. 98°11', 2- $\frac{1}{2}$ miles east of Anadarko, Okla., on upstream side of section line road bridge.

AREA: 25,150 acres (39.3 sq. miles). For maps of area, see Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-7 and 69.10-4.

SLOPES:	Slope — Percent	0-1	1-3	3-5	5-8	8-12	12 and above	1/
	Percent of area	20	14	21	14	29	2	

SOILS: The alluvial soils are derived from alkaline red bed sediments, and the residual soils are derived from Rush Springs sandstone. 1/

Soil	Percent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Darnell Noble sandy loams	33	8	Weak medium granular	Moderate	Weak fine crumb	Moderate	60	Moderate	Medium
Noble Cobb Vanos sandy loams	28	12	Moderate medium granular	Moderate	Moderate medium prismatic	Moderate	48	Moderate	Medium
McLain Pulaski silty clay loams	20	14	Moderate fine granular	Moderate	Moderate fine crumb	Moderate	60	Moderate	Medium
Cobb Daugherty Noble fine sandy loams	19	10	Structureless fine granular	Moderate	Moderate medium prismatic	Moderate	36	Moderate	Medium

EROSION:	Erosion class	1	2	3	4	1/
	Percent of area	26	54	16	4	

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII	1/
	Percent of area	20	14	26	14	2	22	2	

1/ Information presented for general descriptive purposes and is not intended to be precise data.

GEOLOGY: The geologic formations and their exposed surface area in percent are: Alluvium, 25.5; Cloud Chief, 6.7; Rush Springs, 66.4; Dog Creek, Blaine, and Marlow, 1.4; and Chickasha, 0.0. The gaging station is located on the alluvial plain of the Washita Valley. The 9.27 sq. miles of alluvium (highest percent-alluvium of all tributary stations) has a high capacity for both ground-water and surface-water storage (the flat surface contains a number of oxbow lakes along course of ancient Washita River). The relatively large cross-sectional area of alluvium permits ground-water underflow to bypass the gaging station. All but 0.47 sq. mile of this alluvial area lies on the Washita alluvial plain between this station (No. 110) and the upstream Tonkawa station (No. 111); this large alluvial area between the two stations has an appreciable effect on the rates and volumes of runoff at the lower (No. 110) station. See description of hydrogeology and the general geology map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-8 and 9. Source of data: Oklahoma Geological Survey, Norman, Okla., Bulletins 73, 87, and Circular 61.

SURFACE DRAINAGE: Good, except in alluvial area (see "Geology" description); length of principal waterway 10.9 miles.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: Precipitation: Recording weighing type gages installed on a 3-mile square grid. Grid pattern oriented in north-northeast direction and consists of approximately 10 gages, all in operation, with varying time scales (primarily 24-hour). Runoff: Tape down from reference point on gage well; Stevens A-35 water-level recorder installed in 18-inch well at center of upstream side of county road bridge with 4.8 inches per day time scale; datum 1,145.60 ft. m.s.l. elev. by 1929 adjustment. Shifting control caused by beaver dams. Low flow current meter measurements made by wading; high flow current meter measurements made by crane from upstream side of bridge. Measurements made periodically and during each major event.

WATERSHED CONDITIONS: The principal crop rotation on the cultivated land is alfalfa, cotton, and maize. Approximately 30% of the bottom land is subject to flooding and silt damage. This, along with a high-water table, makes crop production impossible in this area. Modern equipment is used, but the one-way and moldboard plow are the most common tools. Diversion terraces are the most common structural measures used in the area. Some drainage has been attempted but never carried through. Fertilization is based on recommendations made from soil tests. Farm ponds average about 3 per sq. mile. The following table shows the land use:

Percent of watershed in											
Cultivation - 26						Pasture or range - 63		Wooded pasture - 4		Miscellaneous - 7	
Percent of cultivated land in						Classification of range site condition based on production		Classification of range site condition based on production		Farmsteads, roads, airports, etc.	
Alfalfa - 30		Sowed crops - 50		Row crops - 20							
Average yield ton/ac	Wheat yield bu/ac	Oats yield bu/ac	Barley yield bu/ac	Milo yield bu/ac	Cotton yield-lint lb/ac	Good - 20% Fair - 20% Poor - 60%		Fair - 40% Poor - 60%			
5.5	30	35	35	50	650	The general practice for good range utilization is 1 animal unit per 5 acres.					

GENERALLY REPRESENTS: Small mixed tributary watersheds of the Southwestern Prairies, Cotton and Forage Region, specifically the Cross Timbers and the Central Great Plains Winter Wheat and Range Region, specifically the Central Rolling Red Plains land resource areas (J-84 and H-78) in Kansas, Oklahoma, and Texas.

MONTHLY PRECIPITATION AND RUNOFF (inches)							CHICKASHA, OKLAHOMA WATERSHED 110 NEAR ANADARKO							
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	1/P Q	.07	.32	1.47	2.54 .056	2.20 .009	1.83 .011	1.97 .000	.94 .000	1.20 .000	.63 .000	2.93 .000	.81 .000	16.91
STA AV	2/P Q	.20	.58	1.09	2.36	3.23	5.19	2.40	1.38	2.88	1.48	2.44	.93	24.16
MEAN P	3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS ^{4/}																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME

MAXIMUMS FOR PERIOD OF RECORD ^{4/}																
1963 TO 1963	4-27 1963	.0003	4-27 1963	.0003	4-27 1963	.0006	4-27 1963	.002	4-27 1963	.003	4-27 1963	.005	4-27 1963	.008	4-27 1963	.017

Notes: Watershed conditions same as that described on previous page under WATERSHED CONDITIONS. For maps, see Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, pp. 69.7-7 and 9, and 69.10-4. ^{1/} Precipitation data obtained from a Thiessen weighted average of 10 gages on the watershed. ^{2/} Precipitation records began Oct. 1961; runoff records began Apr. 1963. ^{3/} Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. ^{4/} Period of record began in April 1963 and the maximum discharge and depths shown are probably not the annual maximums for 1963.

MISCELLANEOUS DATA	
<u>RUNOFF PEAK DATA:</u> YEAR (1963): Incomplete. PERIOD OF RECORD: Maximum — Apr. 28, 1963, 6.7 cfs (7.21 ft). Minimum — no flow (5.40 ft). PEAK DISCHARGES: (Above base of 100 cfs) 1963 — partial year none.	
<u>ABBREVIATED RATING TABLE:</u> 1963 (Stage recorder datum; gage height in ft, discharge in cfs).	
<u>GAGE HEIGHT</u>	<u>DISCHARGE</u>
6.7	1.0
6.8	1.5
6.9	2.1
7.0	3.0
7.1	4.1
7.2	5.4

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 110 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.01	.00	.00	.45	.00	.00	.02	.00	.06	.00
2	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.52	.00	.00	.00	.00	.06	.00
4	.06	.00	.42	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.01	.00	.00	.00	.07	.00	.00	.00	.04	.00	.00	.00
6	.00	.00	.00	.02	.00	.00	.00	.00	.12	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.26	.00	.00	.02	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.03	.00	.03	.00	.00	.00	.00
10	.00	.09	.21	.00	.00	.00	.25	.02	.00	.00	.00	.51
11	.00	.00	.00	.00	.00	.44	.26	.00	.02	.00	.00	.21
12	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.83	.36	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.21	.00	.00	.00
16	.00	.16	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00
17	.00	.01	.00	.24	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.19	.00	.00	.05	.00
19	.00	.00	.00	.00	.16	.00	.00	.00	.00	.00	1.97	.00
20	.00	.00	.00	.00	.01	.00	.00	.00	.00	.41	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.11	.18	.02
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.61	.00
23	.00	.00	.00	.00	.00	.37	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.28	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.20	.00	.00	.00	.66	.00	.00	.00
26	.00	.00	.00	1.80	.00	.00	.22	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.24	.00	.00	.00	.00	.00
28	.00	.06	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00
29	.00	-----	.01	.00	.00	.00	.03	.18	.00	.00	.00	.07
30	.00	-----	.56	.00	.63	.00	.00	.09	.00	.00	.00	.00
31	.00	-----	.00	-----	1.05	-----	.00	.04	-----	.11	-----	.00
TOTAL	.07	.32	1.47	2.54	2.20	1.83	1.97	.94	1.20	.63	2.93	.81
STA. AV.	.20	.58	1.09	2.36	3.23	5.19	2.40	1.38	2.88	1.48	2.44	.93

NOTES: RECORDS BEGAN OCT 1, 1961. YEARLY PRECIPITATION 16.91 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 10 GAGES ON THE WATERSHED

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 110 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1				2.1	.6	.0	.0	.0	.0	.0	.0	.0
2				2.1	.4	.0	.0	.0	.0	.0	.0	.0
3				2.0	.6	.2	.0	.0	.0	.0	.0	.0
4				1.8	.8	1.3	.0	.0	.0	.0	.0	.0
5				1.8	.9	1.8	.0	.0	.0	.0	.0	.0
6				2.0	.8	* 1.8	.0	.0	.0	.0	.0	.0
7				2.4	.9	1.8	.0	.0	.0	.0	.0	.0
8				2.5	1.5	1.8	.0	.0	.0	.0	.0	.0
9				2.6	* 1.3	1.6	.0	.0	.0	.0	.0	.0
10				2.9	.9	.9	.0	.0	.0	.0	.0	.0
11				2.7	.5	.3	.0	.0	.0	.0	.0	.0
12				2.3	.2	.1	.0	.0	.0	.0	.0	.0
13				2.3	.1	.0	.0	.0	.0	.0	.0	.0
14				2.7	.0	.0	.0	.0	.0	.0	.0	.0
15				2.7	.0	.0	.0	.0	.0	.0	.0	.0
16				2.1	.0	.0	.0	.0	.0	.0	.0	.0
17				1.8	.0	.0	.0	.0	.0	.0	.0	.0
18				1.3	.0	.0	.0	.0	.0	.0	.0	.0
19				.9	.0	.0	.0	.0	.0	.0	.0	.0
20				.7	.0	.0	.0	.0	.0	.0	.0	.0
21				.4	.0	.0	.0	.0	.0	.0	.0	.0
22				.4	.0	.0	.0	.0	.0	.0	.0	.0
23				.5	.0	.0	.0	.0	.0	.0	.0	.0
24				.8	.0	.0	.0	.0	.0	.0	.0	.0
25				.9	.0	.0	.0	.0	.0	.0	.0	.0
26				1.7	.0	.0	.0	.0	.0	.0	.0	.0
27			*	4.2	.0	.0	.0	.0	.0	.0	.0	.0
28				4.9	.0	.0	.0	.0	.0	.0	.0	.0
29			-----	3.2	.0	.0	.0	.0	.0	.0	.0	.0
30			-----	.9	.0	.0	.0	.0	.0	.0	.0	.0
31			-----	.0	.0	.0	.0	.0	.0	.0	.0	.0
MEAN				2.0	.3	.4	.0	.0	.0	.0	.0	.0
INCHES				.056	.009	.011	.000	.000	.000	.000	.000	.000

NOTES: RECORDS BEGAN APR 1, 1963. TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0009464. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 2,096. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

CHICKASHA, OKLAHOMA WATERSHED 522 NEAR NINNEKAH

LOCATION: WATERSHED — Little Washita River Watershed above U. S. Highway 81 bridge south of Chickasha in Grady and Caddo Counties, Okla.; tributary to Washita River; Red River Basin.

GAGING STATION — SE $\frac{1}{4}$ sec. 32, T. 6 N., R. 7 W., lat. 34°57', long. 97°57', 5- $\frac{1}{2}$ miles south of Chickasha, Okla.; at U. S. Highway 81 bridge.

AREA: 132,930 acres (207.7 sq. miles). See composite map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.7-7.

SLOPES:

Slope — Percent	0-1	1-3	3-5	5-8	8-12	12 and above
Percent of area	10	15	25	29	20	1

1/

SOILS: The residual soils derived from sandstone are deep sandy soils on gently rolling to rolling slopes and the deep to moderately deep loamy soils are on gently rolling gently sloping areas. 1/

Soil	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to (in.)	Perme- ability	
Daugherty Eufaula sandy loam	45	26	Structureless fine crumb	Rapid	Weak coarse crumb	Rapid	50	Rapid	Very rapid
Stephenville Darnell fine sandy loam	20	18	Weak fine granular	Moderately rapid	Weak fine subangular blocky	Moderate	30	Moderately rapid	Rapid
Nash-Quinlan Grant-Kingfisher silt loam	20	14	Moderate medium granular	Moderate	Moderate medium subangular blocky	Moderate	30	Moderate	Medium
Port-Yahola Pulaski fine sandy loam	15	20	Moderate fine granular	Moderate	Weak fine crumb	Moderately rapid	45	Moderate	Rapid

EROSION:

Erosion class	1	2	3	4
Percent of area	5	5	70	20

1/

LAND CAPABILITY:

Class	I	II	III	IV	V	VI	VII
Percent of area	8	20	20	25	6	20	1

1/

1/ Information presented for general descriptive purposes and not intended to be precise data.

GEOLOGY: The geologic formations and their exposed surface area in percent are: Alluvium, 6.9; Cloud Chief 13.8; Rush Springs, 63.2; Dog Creek-Blaine and Marlow, 16.1; and Chickasha, 0.0. The tributary contains a large percent of Cloud Chief which contains soluble gypsum and other evaporite minerals that contribute locally to the mineral content of the ground water which flows into the streams and thus raises the mineral content of the stream water. See description of hydrogeology and the general geology map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962 USDA Misc. Pub. 1070, pp. 69.7-8 and 9. Source of data: Oklahoma Geological Survey, Norman, Okla.; Bulletins 73, 87, and Circular 61.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: Precipitation: Weather Bureau substations plus recording weighing type gages installed on 3-mile square grid. Grid pattern oriented in north-northeast direction and consists of approximately 36 gages, all in operation, with various time scales (primarily 24-hour). Runoff: Staff gage on right bank; tape down from reference point on catwalk on upstream side of downstream bridge; Stevens A-35 recorder and bubble gage servo-manometer on left bank with 4.8 in. per day time scale, datum 1,065.94 ft.; all datum m.s.l. elev. by 1929 adjustment. Sandy shifting channel control, unstable at low stages. Low flow current meter measurements made by wading. High flow current meter measurements made from catwalk mounted on upstream side of the downstream bridge. Measurements made periodically and during each major event.

WATERSHED CONDITIONS: Approximately 8% of the cropland is farmed to a rotation of small grain, alfalfa, and cotton. The remainder (approximately 92%) is farmed to sorghums, cotton, peanuts, watermelons, and other truck crops. There are very few structural conservation measures such as terraces, farm ponds, and grassed waterways applied. Much of the land preparation for row crops is by listing or hedging. Most of the land which is planted to row crops is planted to cover crops during the winter. Fertilization is usually based on recommendations determined by soil tests. There is less than 1 farm pond per sq. mile. The following table shows the land use:

Percent of watershed in												
Cultivation - 34						Pasture or range - 26		Wooded pasture - 38		Miscellaneous - 2		
Percent of cultivated land in						Classification of range		Classification of range		Farmsteads, roads,		
Alfalfa - 5		Sowed crops - 14			Row crops - 81		site condition based on		site condition based on		airports, etc.	
Average yield ton/ac	Wheat yield bu/ac	Oats yield bu/ac	Barley yield bu/ac	Milo yield bu/ac	Cotton yield-lint lb/ac	production		production				
						Exc. - 1%	Good - 10%	Good - 3%	Fair - 67%			
						Fair - 60%	Poor - 29%	Poor - 30%				
5	28	45	45	35	270	The general practice for good range utilization is 1 animal unit per 15 acres.						

GENERALLY REPRESENTS: Large mixed tributary watersheds of the Central Great Plains Winter Wheat and Range Region, specifically the Central Rolling Red Plains, and the Central Rolling Red Prairies; and the Southwestern Prairies, Cotton and Forage Region, specifically the Cross Timbers; land resource areas (H-78, 80 and J-84) in Kansas, Oklahoma, and Texas.

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 522 NEAR NINNEKAH										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.13	.36	1.76	2.79	1.50 .124	2.17 .079	2.93 .077	1.12 .006	1.10 .011	.33 .007	2.83 .070	.70 .034	17.72			
STA AV 2/P	.25	.75	1.36	2.53	2.08	4.71	2.70	.94	3.79	1.84	2.74	.95	24.64			
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS 4/																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		6 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 63 TO 19 63	5-23 1963	.0117	5-23 1963	.0080	4-26 1963	.0140	4-26 1963	.035	4-26 1963	.055	4-26 1963	.072	4-26 1963	.084	4-26 1963	.094
NOTES: Watershed conditions same as that described on previous page under <u>WATERSHED CONDITIONS</u> . For maps see p. 69.15-4 and Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA, Misc. Pub.1070, pp. 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 36 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began May 1963. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began in April 1963 and the maximum discharge and depths shown are probably not the annual maximums for 1963.																
MISCELLANEOUS DATA																
<u>RUNOFF PEAK DATA:</u> YEAR (1963): Incomplete																
PERIOD OF RECORD: Maximum — June 23, 1963, 1,570 cfs (11.74 ft). Minimum — no flow.																
PEAK DISCHARGES: (Above base of 1,500 cfs) 1963 - partial year — June 23, 1,570 cfs (11.74 ft); July 13, 1,530 cfs (11.13 ft).																
<u>ABBREVIATED RATING TABLE:</u> 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
<u>GAGE HEIGHT</u>								<u>DISCHARGE</u>								
7.20								1.4								
7.35								5.4								
7.50								12								
7.80								34								
8.00								77								
8.50								148								
9.00								288								
10.00								725								
11.50								1,850								

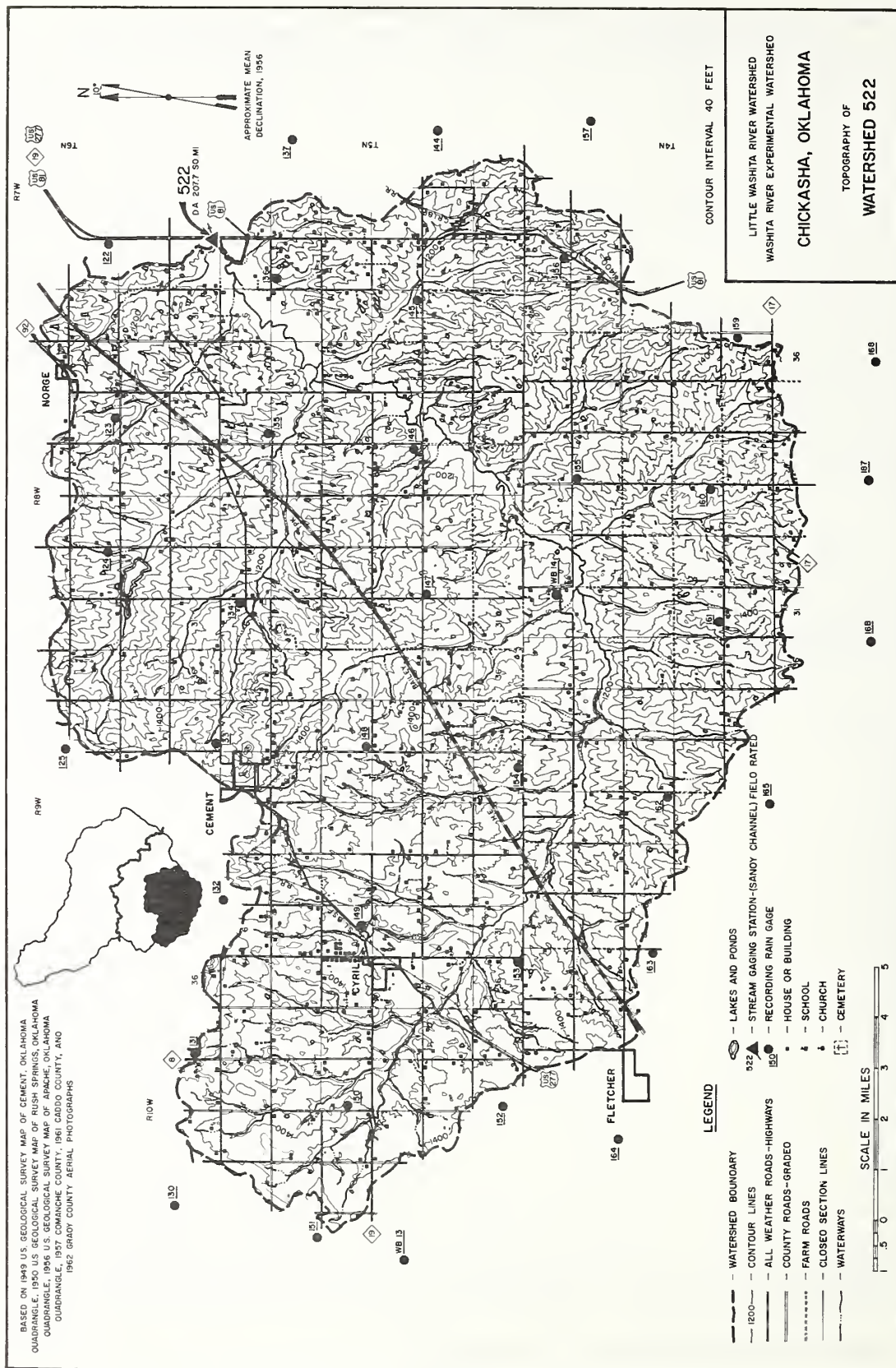
1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA		WATERSHED 522 NEAR NINNEKAH				
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.01	.00	.00	.43	.00	.00	.01	.00	.08	.00
2	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.41	.00	.00	.09	.00	.01	.00
4	.12	.00	.25	.00	.01	.00	.00	.00	.01	.00	.00	.00
5	.01	.00	.00	.18	.07	.03	.00	.00	.06	.00	.00	.00
6	.00	.00	.00	.02	.06	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.04	.01	.00	.00	.00	.00
8	.00	.00	.35	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
10	.00	.09	.47	.00	.00	.00	.64	.03	.00	.00	.00	.36
11	.00	.00	.00	.00	.00	.19	.59	.00	.17	.00	.00	.26
12	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	1.18	.51	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.01	.00	.00	.00	.00	.00	.27	.00	.00	.00
16	.00	.16	.00	.00	.00	.15	.00	.00	.02	.00	.00	.00
17	.00	.00	.00	.31	.00	.01	.00	.00	.02	.00	.00	.00
18	.00	.00	.00	.03	.00	.00	.00	.09	.00	.00	.03	.00
19	.00	.00	.00	.00	.12	.00	.00	.00	.00	.00	1.98	.00
20	.00	.00	.00	.00	.01	.00	.00	.00	.00	.26	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.04	.03
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.69	.00
23	.00	.00	.00	.00	.00	.95	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.02	.02	.45	.00	.00	.00
26	.00	.00	.00	2.15	.00	.00	.17	.00	.00	.00	.00	.00
27	.00	.00	.00	.05	.00	.00	.09	.00	.00	.00	.00	.00
28	.00	.11	.00	.00	.00	.00	.17	.00	.00	.00	.00	.00
29	.00	-----	.00	.00	.00	.00	.03	.16	.00	.00	.00	.05
30	.00	-----	.67	.00	.70	.00	.00	.08	.00	.00	.00	.00
31	.00	-----	.00	-----	.44	-----	.00	.19	-----	.05	-----	.00
TOTAL	.13	.36	1.76	2.79	1.50	2.17	2.93	1.12	1.10	.33	2.83	.70
STA AV	.25	.75	1.36	2.53	2.08	4.71	2.70	.94	3.79	1.84	2.74	.95

NOTES: RECORDS BEGAN OCT 1, 1961. YEARLY PRECIPITATION 17.72 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 36 GAGES ON THE WATERSHED.

NOTES: RECORDS BEGAN OCT 1, 1961. YEARLY PRECIPITATION 17.72 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 36 GAGES ON THE WATERSHED.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 522 NEAR NINNEKAH									
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC			
1					28	28	3.5	2.1	4.5	1.0	<u>2.2</u>	5.8			
2					32	18	3.5	3.4	1.8	1.2	2.6	7.0			
3					<u>33</u>	18	*	3.4	1.9	1.0	3.0	7.4			
4					29	16	3.5	1.5	1.2	.8	3.3	7.1			
5					29	*	12	3.0	1.5	1.1	.6	4.0	7.6		
6					30	12	2.2	1.2	.9	1.0	*	4.1	*	8.1	
7					33	11	<u>2.0</u>	.5	1.7	.8	4.1	7.6			
8					*	33	11	2.3	1.0	1.5	.6	4.0	6.9		
9					32	12	2.5	1.7	.8	.7	4.0	6.9			
10					31	11	2.8	1.1	.3	.2	4.2	6.0			
11					30	11	*	10.9	.8	<u>.2</u>	<u>.0</u>	4.3	5.0		
12					30	12	24	.1	.9	.0	4.3	3.0			
13					17	31	13	*	<u>16.7</u>	*	2.1	.3	1.0	4.3	<u>2.0</u>
14					15	31	10	27	<u>5.0</u>	1.2	.6	4.0	2.0		
15					15	30	8.7	11	3.2	1.6	.1	3.9	2.0		
16					15	29	9.2	7.9	1.8	2.8	.0	4.0	6.7		
17					16	20	11	*	4.2	1.3	3.3	.0	4.1	4.4	
18					36	12	*	12	3.2	.2	3.3	.0	4.4	3.0	
19					25	13	12	2.7	.3	3.2	.0	*	<u>13.5</u>	2.4	
20					19	13	11	2.6	.8	2.8	.6	*	62	3.5	
21					17	13	9.2	3.0	.9	2.4	4.1	14	3.8		
22					17	*	12	8.8	2.8	.8	1.5	<u>4.6</u>	35	3.8	
23					16	14	<u>12.6</u>	2.9	.1	1.1	<u>2.9</u>	22	4.8		
24					*	17	14	9.3	2.8	.0	.9	*	2.1	13	9.6
25					23	13	6.0	2.9	.0	1.6	1.9	11	9.0		
26					100	11	5.1	3.0	.0	*	2.8	1.7	10	9.0	
27					229	10	4.8	4.6	.0	2.7	1.9	8.0	*	9.0	
28					51	10	5.0	5.0	.0	2.0	1.9	4.4	9.1		
29					28	<u>9.7</u>	5.0	*	5.5	.1	4.1	1.7	4.2	8.8	
30					26	19	<u>2.6</u>	4.8	.1	<u>8.6</u>	1.8	4.8	<u>9.9</u>		
31					18	22	4.2	1.4	1.4	2.1	2.0	13	5.2		
MEAN					22	15	14	1.1	2.1	1.2	.07	.034			
INCHES					.124	.074	.077	.006	.011	.007	.070	.034			

NOTES: RECORDS BEGAN APR 13, 1963. TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0001791. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 11,080. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.



CHICKASHA, OKLAHOMA WATERSHED 512 AT TABLER

LOCATION: WATERSHED — East Bitter Creek Watershed above U. S. Highway 62 bridge at Tabler, in Grady County, Okla.; tributary to Washita River; Red River Basin.

GAGING STATION — SW $\frac{1}{4}$ sec. 27, T. 7 N., R. 6 W., lat. 35°05', long. 97°50', in Tabler, Okla., at U. S. Highway 62 bridge.

AREA: 22,780 acres (35.6 sq. miles). See composite map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.7-7.

SLOPES:	Slope — Percent	0-1	1-3	3-5	5-8	8-12	12 and above	
	Percent of area	16	10	30	15	15	14	1/

SOILS: Residual, derived from fine grained sandstone and shale materials. They are deep, fine textured soils on gently rolling to rolling slopes with more shallow soils on the breaks. 1/

Soil	Per- cent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permea- ability	Structure	Permea- ability	Avg. depth to (in.)	Permea- ability	
Kingfisher silt loam	57	12	Moderate medium granular	Moderate	Strong medium subangular blocky	Moderate	40	Moderately slow	Medium
Grant-Nash silt loams	16	7	Moderate medium granular	Moderate	Moderate medium subangular blocky	Moderate	30	Moderate	Medium
Quinlan loam	14	6	Weak fine granular	Moderately rapid	Weak very fine subangular blocky	Moderate	24	Moderate	Medium
Chickasha loam	13	14	Moderate fine granular	Moderate	Moderate medium subangular blocky	Moderate	45	Moderate	Medium

EROSION:	Erosion class	1	2	3	4	
	Percent of area	12	13	65	10	1/

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII	
	Percent of area	3	20	40	10	0	17	10	1/

1/ Information presented for general descriptive purposes and not intended to be precise data.

GEOLOGY: The geologic formations and their exposed surface area in percent are: Alluvium, 9.7; Cloud Chief, 0.0; Rush Springs, 0.0; Dog Creek, Blaine and Marlow, 0.0; and Chickasha, 90.3. The tributary contains only two geologic formations; therefore, the geology is relatively simple. The quality of surface and ground water is relatively good. See description of hydrogeology and general geology map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-8 and 9. Source of data: Oklahoma Geological Survey, Norman, Okla.; Bulletins 73, 87 and Circular 61.

SURFACE DRAINAGE: Good, length of principal waterway 10.4 miles.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: **Precipitation:** Recording weighing type gages installed on 3-mile square grid. Grid pattern oriented in north northeast direction and consists of approximately 10 gages, all in operation, with various time scales (primarily 24-hour). **Runoff:** Tape down from reference point on footbridge; Stevens A-35 recorder and bubble gage servo-manometer on right bank with 9.6 inches per day time scale for headwater gage, datum 1,064.91 ft.; all datum m.s.l. elev. by 1929 adjustment. Tailwater consists of Stevens A-35 water level recorder installed in 30-inch well with 9.6 inches per day time scale, datum 1,054.91 ft. Artificial control consisting of a broad crested "V" notch weir with 3 to 1 side slopes made of steel sheet piling with a reinforced concrete cap. Low flow current meter measurements made by wading. High flow current meter measurements made from footbridge upstream from weir. Measurements made periodically and during each major event.

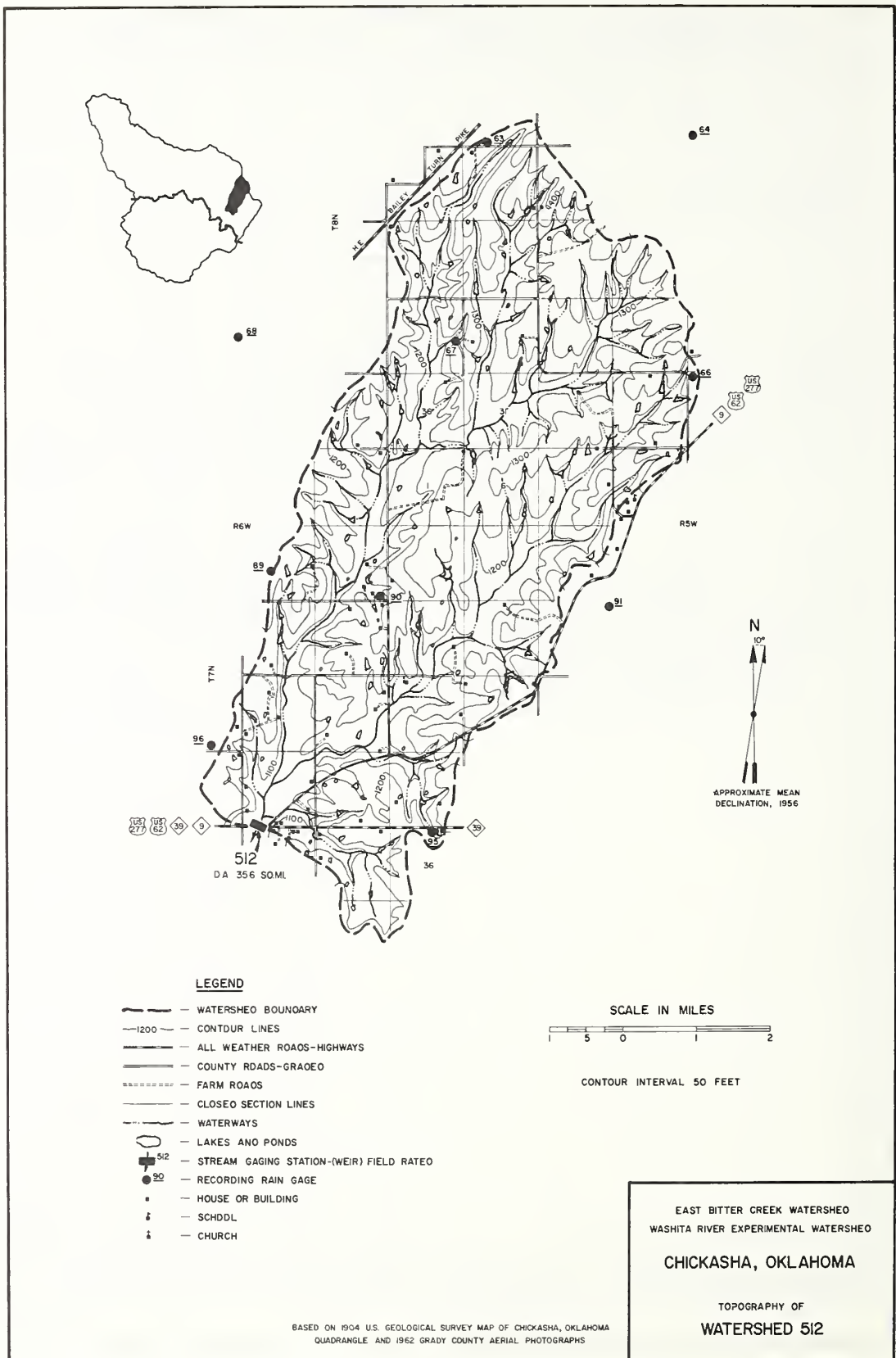
WATERSHED CONDITIONS: Approximately 30% of the cropland is farmed with a rotation of small grains, alfalfa, and cotton. The remainder is farmed to small grains, cotton, and sorghums. A moldboard plow which buries the crop residue is used for land preparation by most farmers. Spring-tooth or spike-tooth harrows are used for weed control until the following crop is planted. Fertilization in the most part is based on recommendations made from a soil analysis. Approximately 20% of the flatter land has no structural conservation measures applied. Approximately 90% of the land with slopes above 1-1/2% has structural conservation measures such as terraces, farm ponds, and grassed waterways applied. There are approximately 6 farm ponds per sq. mile. The following table shows the land use:

Percent of watershed in											
Cultivation - 48						Pasture or range - 49		Wooded pasture - 1		Miscellaneous - 2	
Percent of cultivated land in						Classification of range site condition based on production		Classification of range site condition based on production		Farmsteads, roads, airports, etc.	
Alfalfa - 12	Sowed crops - 68	Row crops - 20									
Average yield ton/ac	Wheat yield bu/ac	Oats yield bu/ac	Barley yield bu/ac	Milo yield bu/ac	Cotton yield-lint lb/ac						
						Exc. - 2%	Good - 18%	Fair - 65%	Good - 22%		
						Fair - 65%	Poor - 15%	Poor - 13%			
4.8	28	52	33	32	300	The general practice for good range utilization is 1 animal unit per 12 acres.					

GENERALLY REPRESENTS: Medium size tributary watersheds of the Central Great Plains Winter Wheat and Range Region specifically the Central Rolling Red Prairies land resource area (H-80) in Kansas, Oklahoma, and Texas.

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 512 AT TABLER										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.31	.34	2.21	3.88	1.11	4.32	3.27	.74 .009	1.25 .010	.89 .019	2.62 .083	.71 .078	21.65			
STA AV 2/P Q	.44	.71	1.70	2.92	1.98	6.09	2.31	1.59	3.76	1.66	2.57	1.09	26.82			
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS 4/																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 63 TO 19 63	7-28 1963	.0052	7-28 1963	.0050	7-28 1963	.0090	7-28 1963	.017	7-28 1963	.021	7-28 1963	.023	7-28 1963	.027	11-19 1963	.043
Notes: Watershed conditions same as that described on previous page under WATERSHED CONDITIONS. For maps see p. 69.16-4 and Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 10 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Aug. 1963. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began in July 1963 and the maximum discharge and depths shown are probably not the annual maximums for 1963.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1963): Incomplete.																
PERIOD OF RECORD: Maximum — July 28, 1963, 120 cfs (3.82 ft). Minimum — Aug. 24, 1963, no flow (1.00 ft).																
PEAK DISCHARGES: (Above base of 500 cfs) 1963 — partial year - none.																
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT				DISCHARGE				GAGE HEIGHT				DISCHARGE				
1.00				.00				2.50				21.0				
1.40				.62				3.00				45.5				
1.70				2.65				3.50				83.0				
2.00				6.95				4.00				142.0				

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 512 AT TABLER						
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC
1	.00	.00	.01	.00	.00	.17	.00	.00	.11	.00	.07	.00
2	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.51	.00	.00	.11	.00	.04	.00
4	.15	.00	.34	.00	.02	.00	.00	.00	.00	.00	.00	.00
5	.14	.00	.00	.20	.00	.00	.00	.00	.06	.00	.00	.00
6	.00	.00	.00	.02	.10	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
8	.00	.00	.26	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.04	.65	.00	.00	.00	.11	.01	.00	.00	.00	.38
11	.00	.00	.00	.00	.00	.10	.83	.00	.25	.00	.00	.26
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.40	.34	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.02	.00	.00	.00	.00	.00	.17	.00	.00	.00
16	.00	.16	.00	.00	.00	.07	.00	.00	.03	.00	.00	.00
17	.00	.00	.00	.11	.00	.00	.00	.00	.04	.00	.00	.00
18	.00	.00	.00	.08	.00	.00	.00	.07	.00	.00	.01	.00
19	.02	.00	.00	.00	.13	.00	.00	.00	.00	.00	1.81	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.82	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.03
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.69	.00
23	.00	.00	.00	.00	.00	3.47	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.34	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.01	.00	.48	.00	.00	.00
26	.00	.00	.00	3.10	.00	.00	.08	.00	.00	.00	.00	.00
27	.00	.00	.00	.03	.00	.00	.45	.00	.00	.00	.00	.00
28	.00	.14	.00	.00	.00	.00	1.10	.03	.00	.00	.00	.00
29	.00	-----	.00	.00	.00	.00	.29	.28	.00	.00	.00	.04
30	.00	-----	.93	.00	.19	.00	.00	.00	.00	.00	.00	.00
31	.00	-----	.00	-----	.59	-----	.00	.00	-----	.06	-----	.00
TOTAL	.31	.34	2.21	3.88	1.11	4.32	3.27	.74	1.25	.89	2.62	.71
STA AV	.44	.71	1.70	2.92	1.98	6.09	2.31	1.59	3.76	1.66	2.57	1.09
NOTES: RECORDS BEGAN OCT 1, 1961. YEARLY PRECIPITATION 21.65 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 10 GAGES ON THE WATERSHED.												
1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 512 AT TABLER						
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC
1								<u>1.0</u>	.3	.2	<u>1.5</u>	2.2
2								.7	.3	.2	1.7	2.2
3								.7	.2	.2	1.7	2.2
4								.5	.2	.2	1.7	2.1
5								.4	.2	.2	1.9	* 2.0
6								.3	.2	.2	1.9	2.0
7								.3	.2	.2	1.7	1.9
8								.3	.2	.2	1.6	<u>1.7</u>
9								.3	.2	.2	1.6	1.8
10								.3	<u>.1</u>	.2	1.7	2.7
11								.3	* .1	* .1	1.7	<u>3.2</u>
12								.2	.2	.1	1.7	2.9
13								.4	.2	.1	1.6	2.3
14								.5	.2	.2	1.7	2.2
15								.4	.2	.2	1.7	2.3
16								.3	.4	.2	1.8	2.5
17								.2	.7	.2	1.9	2.8
18							.8	.2	.7	.2	1.9	2.4
19							* .7	.3	.7	.2	<u>1.4</u>	2.4
20							.5	.3	.4	<u>2.4</u>	* 4.3	2.4
21							.5	.3	.4	1.4	3.3	2.4
22							.4	.2	.2	.9	* 7.5	2.4
23							.4	.1	.2	.8	4.2	2.2
24							.3	<u>.0</u>	.1	.8	2.7	2.2
25							.3	.0	.4	.8	2.5	3.0
26							.3	.0	.5	1.0	2.4	* 3.0
27							.4	.0	.4	1.3	2.3	2.9
28							18	.0	.4	1.2	2.1	2.7
29							3.5	.1	.4	1.2	1.8	2.5
30							3.5	.2	.3	1.2	1.9	2.5
31							<u>1.5</u>	.2	-----	1.3	-----	2.6
MEAN								.009	.3	.010	.019	2.7
INCHES											.083	.078
NOTES: RECORDS BEGAN JULY 18, 1963. TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .001045. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 1,898. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												



CHICKASHA, OKLAHOMA WATERSHED 621 NEAR TABLER

LOCATION: WATERSHED — Winter Creek Watershed above county farm to market road bridge north of Alex in Grady County, Okla.; tributary to Washita River; Red River Basin.

GAGING STATION — NE $\frac{1}{4}$ sec. 18, T. 6 N., R. 5 W., lat. 35°00', long. 97°46', 5 miles north and 1 mile east of Alex, Okla., about 1,000 feet downstream from county section line farm to market road bridge over Winter Creek.

AREA: 21,310 acres (33.3 sq. miles). See composite map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070. p. 69.7-7.

SLOPES:	Slope — Percent	0-1	1-3	3-5	5-8	8-12	12 and above	1/
	Percent of area	15	20	36	24	2	3	

SOILS: Residual, derived from siltstone and sandstone materials with some interbedding of shale. 1/

Soil	Percent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Stephenville-Cobb fine silt loams	50	10	Moderate fine granular	Moderate	Moderate fine subangular blocky	Moderate	30	Moderate	Medium
Nash-Quinlan loams	25	8	Weak fine granular	Moderate	Weak very fine subangular blocky	Moderate	32	Slow	Medium
Port-Yahola fine sandy loams	15	12	Moderate fine granular	Moderate	Weak fine crumb	Moderately rapid	44	Rapid	Rapid
Grant silt loam	10	7	Moderate medium granular	Moderate	Moderate fine subangular blocky	Moderate	35	Moderate	Medium

EROSION:	Erosion class	1	2	3	4	1/
	Percent of area	5	5	45	45	

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII	1/
	Percent of area	1	15	40	25	3	15	1	

1/ Information presented for general descriptive purposes and not intended to be precise data.

GEOLOGY: The geologic formations and their exposed surface area in percent are: Alluvium, 7.8; Cloud Chief, 0.0; Rusb Springs, 0.0; Dog Creek, Blaine, and Marlow, 0.0; and Chickasha, 92.2. This tributary watershed contains only two geologic formations, therefore, the geology is relatively simple. A sandy facies of the Chickasha formation contributes sand to the valley alluvium; this alluvium tends to be permeable and easily eroded. Water quality is good; the least mineralized of all major tributaries in the study reach. See description of hydrogeology and the general geology map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, pp. 69.7-8 and 9. Source of data: Oklahoma Geological Survey, Norman, Okla., Bulletins 73, 87 and Circular 61.

SURFACE DRAINAGE: Good, length of principal waterway 8.5 miles.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: Precipitation — Weather Bureau substation plus recording weighing type gages installed on a 3-mile square grid. Grid pattern oriented in north-northeast direction and consists of approximately 9 gages with various time scales (primarily 24-hour). Runoff: Tape down from reference point on left bank; staff gages on upstream side of weir; Stevens A-35 recorder and bubble gage servo-manometer on left bank 1,000 ft. downstream from county bridge with 9.6 inches per day time scale for headwater gage, datum 1,048.20 ft.; all datum m.s.l. elev. by 1929 adjustment. Tailwater consists of staff gage on left bank, datum 1,048.20 ft. Artificial control consisting of a broad crested "V" notch weir with a variable slope made of steel sheet piling with a reinforced concrete cap. Low flow current meter measurements made by wading; high flow current meter measurements made from cableway upstream from weir. Measurements made periodically and during each major event.

WATERSHED CONDITIONS: A rotation of small grains, alfalfa, and cotton are grown on the bottomland area comprising approximately 16% of the drainage area. The rest of the cultivated area is farmed to broomcorn, cotton, and sorghums. Most of the row crops are followed by winter cover crops. Farmers in the area use moldboard plows which bury crop residue. Weeds are controlled by surface tillage with spring-tooth or spike-tooth harrows prior to the planting of the following crops. Fertilization is based on recommendations made from soil tests. There are very few structural conservation measures such as farm ponds or grassed waterways applied. Farm ponds will average about 2 per sq. mile. The following table shows the land use:

Percent of watershed in									
Cultivation - 44					Pasture or range - 12		Wooded pasture - 42		Miscellaneous - 2
Percent of cultivated land in					Classification of range		Classification of range		Farmsteads, roads, airports, etc.
Alfalfa - 10	Sowed crops - 35			Row crops - 55	site condition based on production		site condition based on production		
Average yield ton/ac	Wheat yield bu/ac	Oats yield bu/ac	Barley yield bu/ac	Milo Cotton yield-lint lb/ac	Good - 12%	Fair - 32%	Good - 10%	Fair - 30%	
					Poor - 56%		Poor - 60%		
4	28	35	40	29	The general practice for good range utilization is 1 animal unit per 18 acres.				

GENERALLY REPRESENTS: Medium size tributaries of the Southwestern Prairies, Cotton and Forage Region, specifically the Cross Timbers land resource area (J-84) in Kansas, Oklahoma, and Texas.

MONTHLY PRECIPITATION AND RUNOFF (inches)							CHICKASHA, OKLAHOMA WATERSHED 621 NEAR TABLER									
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.37	.33	1.68	4.03	1.23	3.56	2.20	.88	1.34	.37 .012	2.64 .079	.72 .074	19.35			
STA AV 2/P	.44	.68	1.48	3.20	2.20	6.00	2.08	1.29	3.36	1.72	2.54	1.11	26.10			
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS 4/																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 63 TO 19 63	11-19 1963	.0029	11-19 1963	.0029	11-19 1963	.0056	11-19 1963	.014	11-19 1963	.023	11-19 1963	.029	11-19 1963	.032	11-19 1963	.052
Notes: Watershed conditions same as that described on previous page under WATERSHED CONDITIONS. For maps see p. 69.17-4 and Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, pp. 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 9 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Oct. 1963. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began in Oct. 1963 and the maximum discharge and depths shown are probably not the annual maximums for 1963.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1963): Incomplete.																
PERIOD OF RECORD: Maximum — Nov. 19, 1963, 63 cfs (2.81 ft). Minimum — Nov. 12, 1963, 0.1 cfs (1.14 ft).																
PEAK DISCHARGES: (Above base of 500 cfs) 1963 — partial year - none.																
ABBREVIATED RATING TABLE: 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
1.00								0								
1.20								.29								
1.4								1.58								
1.7								6.15								
2.0								15.0								
2.5								40.0								
3.0								80.0								

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 621 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.13	.00	.00	.11	.00	.07	.00
2	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.31	.00	.00	.05	.00	.02	.00
4	.18	.00	.30	.00	.01	.00	.00	.00	.00	.00	.00	.00
5	.18	.00	.00	.20	.00	.00	.00	.00	.05	.00	.00	.00
6	.00	.00	.00	.02	.10	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.23	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.03	.49	.00	.00	.00	.03	.16	.00	.00	.00	.41
11	.00	.00	.00	.00	.00	.07	.94	.00	.29	.00	.00	.24
12	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.34	.40	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.04	.00	.00	.00	.00	.00	.21	.00	.00	.00
16	.00	.16	.01	.00	.00	.02	.00	.00	.08	.00	.00	.00
17	.00	.00	.00	.19	.00	.01	.00	.00	.04	.00	.00	.00
18	.00	.00	.00	.36	.00	.00	.00	.03	.00	.00	.00	.00
19	.01	.00	.00	.00	.07	.00	.00	.00	.00	.00	1.95	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.31	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.03
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.60	.00
23	.00	.00	.00	.00	.00	3.02	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.22	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.02	.00	.50	.00	.00	.00
26	.00	.00	.00	3.01	.00	.00	.11	.00	.00	.00	.00	.00
27	.00	.00	.00	.03	.00	.00	.26	.00	.00	.00	.00	.00
28	.00	.14	.00	.00	.00	.00	.33	.01	.00	.00	.00	.00
29	.00	-----	.00	.00	.00	.00	.16	.28	.00	.00	.00	.04
30	.00	-----	.61	.00	.21	.00	.01	.00	.00	.00	.00	.00
31	.00	-----	.00	-----	.71	-----	.00	.00	-----	.05	-----	.00
TOTAL	.37	.33	1.68	4.03	1.23	3.56	2.20	.88	1.34	.37	2.64	.72
STA AV	.44	.68	1.48	3.20	2.20	6.00	2.98	1.29	3.36	1.72	2.54	1.11
NOTES: RECORDS BEGAN OCT 1, 1961. YEARLY PRECIPITATION 19.35 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 9 GAGES ON THE WATERSHED.												
1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 621 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1										.3	.8	1.9
2										.3	.6	1.9
3										.3	.7	1.9
4										.4	1.0	1.9
5										.3	1.0	2.0
6										.3	1.0	2.0
7										.3	.9	2.0
8										.2	.9	1.7
9										.3	1.1	1.6
10										.3	1.1	2.7
11										*	.2	1.1
12											.1	.9
13											.2	.9
14											.1	.9
15											.1	1.0
16											.1	1.1
17											.1	1.1
18											.1	1.1
19											.2	.23
20											.6 *	4.4
21											.9	2.1
22											.8	7.3
23											.6	3.1
24											.5	2.2
25									1.4		.5	2.1
26									*	.5	.6	2.1
27										.5	.5	2.1
28										.2	.4	2.1
29										.1	.3	1.6
30										.2	.3	1.8
31											.4	-----
MEAN										.3	2.4	2.1
INCHES										.012	.079	.074
NOTES: RECORDS BEGAN SEPT 25, 1963. TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .00117. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 1,776. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

CHICKASHA, OKLAHOMA WATERSHED 121 AT GRACEMONT

LOCATION: WATERSHED — Sugar Creek Watershed above Gracemont in Caddo County, Okla.; tributary to Washita River; Red River Basin.

GAGING STATION — NW¼ sec. 9, T. 8 N., R. 10 W., lat. 35°11', long. 98°16', west side of Gracemont, Okla., on downstream side of county road bridge.

AREA: 128,960 acres (201.5 sq. miles). See composite map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.7-7.

SLOPES:	Slope — Percent	0-1	1-3	3-5	5-8	8-12	12 and above	1/
	Percent of area	16	8	30	19	17	10	

SOILS: Alluvial soils, derived from neutral to alkaline red bed sediments of the Rush Springs sandstone. 1/

Soil	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Noble Cobb sandy loams	40	10	Weak fine granular	Moderate	Moderate medium prismatic	Moderate	36	Moderate	Medium
Darnell Woodward-Quinlan fine sandy loams	36	6	Weak medium granular	Moderate	Weak fine crumb	Moderate	18	Slow	Slow
Port Yahola Pulaski fine sandy loams	16	14	Moderate fine granular	Moderate	Moderate fine crumb	Moderate	60	Moderate	Medium
Noble Vanosa Cobb sandy loams	8	12	Moderate medium granular	Moderate	Moderate medium prismatic	Moderate	48	Moderate	Medium

EROSION:	Erosion class	1	2	3	4	1/
	Percent of area	28	60	10	2	

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII	1/
	Percent of area	15	13	20	14	3	30	5	

1/ Information presented for general descriptive purposes and is not intended to be precise data.

GEOLOGY: The geologic formations and their exposed surface area in percent are: Alluvium, 9.1; Cloud Chief, 1.1; Rush Springs, 72.1; Dog Creek, Blaine, and Marlow, 17.7; and Chickasha, 0.0. The valley alluvium, much of it derived from the Rush Springs sandstone, is permeable and capable of absorbing and temporarily storing considerable quantities of water. The upper reaches of Sugar Creek that drain areas of the prolific Rush Springs sandstone are perennial, but the lower reaches, due to absorption and evapotranspiration, are seasonally dry, especially during years of deficient rainfall. During such dry periods, stream flows that originate from rainfall in the upper reaches of the Sugar Creek Watershed diminish with distance and may entirely disappear in the alluvium. Mineralization of surface and ground water generally increases in a downstream direction as the relatively nonmineralized Rush Springs water is contaminated by soluble salts from the stratigraphically lower Marlow, Dog Creek, Blaine formations. See description of hydrogeology and general geology map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-8 and 9. Source of data: Oklahoma Geological Survey, Norman, Okla., Bulletins 73, 87, and Circular 61.

SURFACE DRAINAGE: Good, length of principal waterway 16.4 miles. The watershed is planned for SCS floodwater detention structures; construction began in the summer of 1962.

CHARACTER OF FLOW: Intermittent, interrupted.

INSTRUMENTATION: **Precipitation:** Weather Bureau substations plus recording weighing type gages installed on a 3-mile square grid. Grid pattern oriented in north-northeast direction and consists of approximately 32 gages, all in operation, with various time scales (primarily 24-hour). **Runoff:** Tape down from reference point on downstream bridge rail; Stevens A-35 water-level recorder installed in 24-inch well at center of downstream side of county road bridge with 9.6 inches per day time scale, datum 1,210.00 ft.; all datum m.s.l. elev. by 1929 adjustment. Sandy shifting channel control, very unstable. Low flow current meter measurements made by wading; high flow current meter measurements made by crane from downstream side of bridge. Measurements made periodically and during each major event. This site gaged by the U. S. Geological Survey Oct. 1959 through Sept. 1963.

WATERSHED CONDITIONS: The cultivated land is farmed to a rotation consisting primarily of peanuts, cotton, and maize. Most of the sloping land has needed structural practices applied. Diversion terraces average about 1 mile per section, and there are about 5 farm ponds per sq. mile. Irrigation is used extensively on the peanut, cotton, and maize land. Most farmers use moldboard plows and spring-tooth or spike-tooth harrows to cultivate the soil. Fertilization is based on soil test recommendations. The following table shows the land use:

Percent of watershed in										
Cultivation - 33						Pasture or range - 30		Wooded pasture - 32		Miscellaneous - 5
Percent of cultivated land in						Classification of range site condition based on production		Classification of range site condition based on production		Farmsteads, roads, airports, etc.
Alfalfa - 8	Sowed crops - 48			Row crops - 44						
Average yield ton/ac	Wheat yield bu/ac	Oats yield bu/ac	Barley yield bu/ac	Milo yield bu/ac	Cotton yield-lint lb/ac	Exc. - 1% Good - 4% Fair - 25% Poor - 70%		Fair - 25% Poor - 75%		
5	35	35	50	75	500	The general practice for good range utilization is 1 animal unit per 15 acres.				

GENERALLY REPRESENTS: Large tributary watersheds of the Southwestern Prairies, Cotton and Forage Region, specifically the Cross Timbers land resource area (J-84) in Kansas, Oklahoma, and Texas.

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 121 AT GRACEMONT										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P 1/ Q	.28	.39	1.50	1.83	1.78	6.23	2.74	1.37	5.53	.87 .005	2.29 .015	.41 .030	25.22			
STA AV 2/P Q	.36	.37	.96	2.12	1.83	6.96	2.06	1.26	5.46	1.93	2.09	.83	26.23			
MEAN P 3/ 63 YR	1.18	1.21	2.03	3.35	5.08	3.88	2.57	2.47	3.25	3.00	1.73	1.43	31.18			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS 4/																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 63 TO 19 63	11-19 1963	.0003	11-19 1963	.0002	11-19 1963	.0003	11-19 1963	.001	11-19 1963	.002	11-19 1963	.004	11-19 1963	.005	11-19 1963	.010
Notes: Watershed conditions same as that described on previous page under <u>WATERSHED CONDITIONS</u> . For maps see p. 69.18-4 and Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-7 and 9. This stream gaging station was maintained from Oct. 1955 to Oct. 1963 by the U.S. Geological Survey. Discharge records were published for this period in Water Supply Papers, 1956-60 and Surface Water Records of Oklahoma, 1961-63. 1/ Precipitation data obtained from a Thiessen weighted average of 32 gages on the watershed. 2/ Precipitation records began in Oct. 1961; runoff records began Oct. 1963. 3/ Mean P based on 63-yr (1901-63) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began in Oct. 1963 and the maximum discharge and depths shown are probably not the annual maximums for 1963.																
MISCELLANEOUS DATA																
<u>RUNOFF PEAK DATA:</u> YEAR (1963): Incomplete PERIOD OF RECORD: Maximum — Nov. 19, 1963, 40 cfs (4.78 ft.). Minimum — no flow. PEAK DISCHARGES: (Above base of 900 cfs) 1963 — partial year - none.																
<u>ABBREVIATED RATING TABLE:</u> 1963 (Stage recorder datum; gage height in ft, discharge in cfs).																
<u>GAGE HEIGHT</u>								<u>DISCHARGE</u>								
3.90								0.4								
4.00								1.1								
4.10								2.5								
4.20								4.6								
4.30								7.7								
4.40								12								
4.50								17								
4.60								24								

1963 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 121 AT GRACEMONT						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.03	.00	.00	.45	.00	.00	.03	.00	.02	.00
2	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.24	.00	.00	.27	.00	.02	.00
4	.16	.00	.45	.00	.35	.00	.00	.00	.00	.00	.00	.00
5	.12	.00	.00	.25	.13	.05	.00	.08	.22	.00	.00	.00
6	.00	.00	.00	.01	.06	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00
8	.00	.00	.37	.00	.00	1.65	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.23	.00	.05	.00	.00	.00	.00
10	.00	.11	.21	.00	.00	.00	.29	.00	.00	.00	.00	.15
11	.00	.00	.00	.00	.00	.02	.21	.00	.31	.00	.00	.17
12	.00	.00	.00	.00	.00	.00	.03	.17	.02	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.25	.73	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.18	.00	.00	.00
16	.00	.21	.00	.00	.00	.20	.00	.00	3.81	.00	.00	.00
17	.00	.02	.00	.00	.00	.02	.00	.00	.01	.06	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00
19	.00	.00	.00	.00	.18	.00	.00	.00	.00	.02	1.69	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.41	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.23	.16	.04
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.40	.00
23	.00	.00	.00	.00	.00	3.37	.00	.00	.00	.09	.00	.00
24	.00	.00	.00	.78	.00	.00	.00	.03	.00	.00	.00	.00
25	.00	.00	.00	.01	.00	.00	.00	.00	.68	.00	.00	.00
26	.00	.00	.00	.77	.00	.00	.08	.00	.00	.00	.00	.00
27	.00	.00	.00	.01	.00	.00	1.68	.00	.00	.00	.00	.00
28	.00	.05	.00	.00	.00	.00	.01	.07	.00	.00	.00	.00
29	.00	-----	.01	.00	.06	.00	.12	.16	.00	.00	.00	.05
30	.00	-----	.29	.00	.28	.00	.00	.00	.00	.00	.00	.00
31	.00	-----	.14	-----	.68	-----	.00	.05	-----	.06	-----	.00
TOTAL	.28	.39	1.50	1.83	1.78	6.23	2.74	1.37	5.53	.87	2.29	.41
STA AV	.36	.37	.96	2.12	1.83	6.96	2.06	1.26	5.46	1.93	2.09	.83

NOTES: RECORDS BEGAN OCT 1, 1961. YEARLY PRECIPITATION 25.22 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 32 GAGES ON THE WATERSHED.

1963 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 121 AT GRACEMONT						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1										.5	.5	2.6
2										.9	.5	2.6
3										.8	.5	2.6
4										.8	.7	3.8
5										.7	* .9	3.2
6										.6	.7	2.9
7										.6	.7	2.7
8										.6	.6	2.1
9										.6	.4	2.3
10										* .5	.8	4.0
11										.5	.9	5.1
12										.5	1.6	4.1
13										.5	.8	4.5
14										.5	.8	4.6
15										.5	.9	5.0
16										.5	.9	6.3
17										.8	.9	* 6.0
18										.8	.8	4.1
19										.6	* 12	3.0
20										2.0	12	3.6E
21										2.3	5.5	4.2E
22										1.6	9.8	4.6E
23										1.1	5.6	5.0E
24										1.1	4.1	5.6E
25										1.0	3.7	6.0E
26										.9	3.3	6.4E
27										.6	3.0	6.9E
28										.5	2.7	6.8E
29		-----								.5	2.3	6.6
30		-----								.4	2.4	6.4
31		-----		-----						.4	-----	6.6
MEAN										.8	2.7	5.3
INCHES										.005	.015	.030

NOTES: RECORDS BEGAN OCT 1, 1963. TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0001846. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 10,750. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

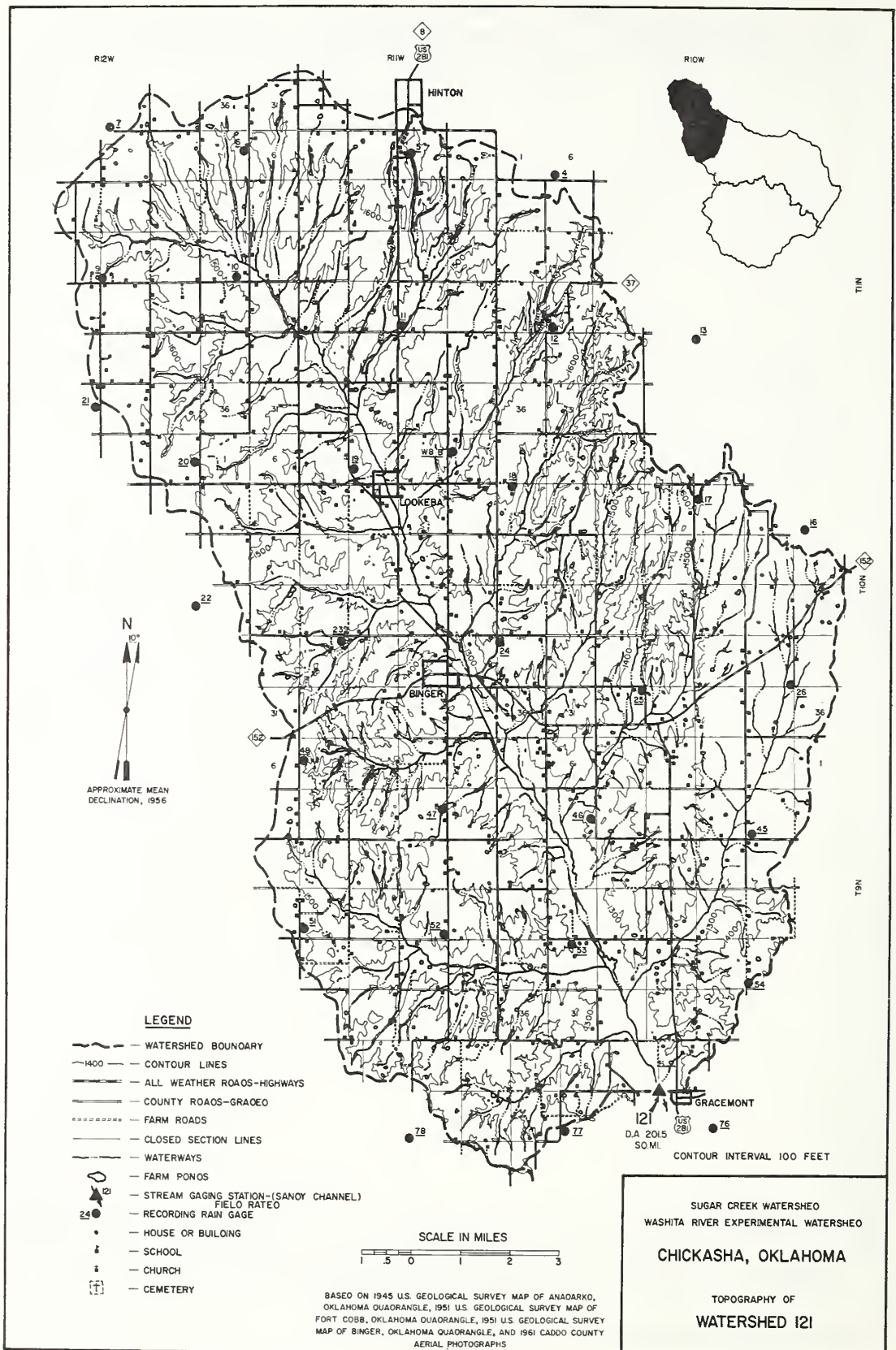


TABLE 4.—Index to selected runoff events for currently operating watersheds, by States, published through 1963

Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/	Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/
ARIZONA						FLORIDA—Continued					
Safford						8.2 W-2	63,170 (98.7)	3-16-28-59 6-17-25-59 3-15-4,1-60 9-15-10-4-60 9-19-10,2-62 2-24-3-6-63	0.0221 .0700 .0303 .0374 .0127 .0035	7-55	4 4 5 5 6 7
45.1 W-I	519	7-19-57 7-26-57 8-3,4-59 7-28,29-61 8-7,8-61 9-25,26-62 7-30-63	0.1560 .3266 .2426 .4813 .6284 <u>2/</u> .327 .0552	1-39	4 4 4 5 5 6 7	8.3 W-3	10,050 (15.7)	3-16-24-59 6-17-24-59 3-15-31-60 9-15-10-1-60 9-19-10-2-62 9-22-10-2-63	.0441 .0941 .0911 .0462 .0329 .0128	10-55	4 4 5 5 6 7
45.2 W-II	682 (1.07)	7-26-40 9-28-41 8-7-42 8-9-43 8-20-56 7-16-59 8-22-61	<u>3/</u> 	1-39	3 3 3 3 4 4 5	8.4 W-4	3,968 (6.20)	10-16-30-59 2-3-16-60 9-22-10,4-60 1-12-21-61 10-14-21-63	.0425 .0145 .1912 .0170 .0235	7-59	6 6 6 6 7
45.3 W-IV	764 (1.19)	7-28-58 8-16-58	<u>3/</u>	1-39	4 4	GEORGIA					
45.4 W-V	723 (1.13)	8-28-57 8-30-57 8-20-60 7-13-61 8-15-61 9-13-61 8-5,6-63	.3603 .3603 .4096 .1713 .2904 .1548 .0745	1-39	4 4 5 5 5 5 7	Watkinsville					
Tombstone						10.1 W-1	19.2	7-11-41 5-15-42 11-26-30-48 4-22,23-51 8-13-58 3-5,6-59 1-29-60 1-30,31-60 8-1-61 4-24,25-45 6-26,27-63	1.96 1.26 .4013 .0738 1.3377 .0914 .0197 .0405 1.8336 2.7113 2.42	9-39	4 4 4 4 5 5 5 5 5 6 7
63.1 W-1	36,900 (57.7)	8-17,18-57 8-16,17-58 7-26,27-59	<u>3/</u>	1-54	4 4 4	IDAHO					
63.2 W-2	28,100 (43.9)	10-4,5-54 7-19,20-55 7-20,21-59 7-21,22-59 7-26,27-59 8-17,18-61 7-25,26-62	<u>3/</u>	1-54	4 4 4 4 4 5 6	Reynolds					
63.3 W-3	2,220 (3.47)	7-19,20-55 8-14-58 8-16,17-58 8-17,18-61 7-25,26-62	<u>3/</u>	5-54	4 4 4 5 6	68.1 W-1 Reynolds Creek	57,700 (90.2)	1-29-2-2-63	.040	1-63	7
63.4 W-4	560	8-14,15-54 7-19,20-55 7-22,23-55 8-14-58 8-16-58 8-17,18-61	<u>3/</u>	6-54	4 4 4 4 4 5	IOWA					
63.5 W-5	5,510 (8.61)	10-4,5-54 8-17,18-57 7-25,26-62 8-19-63 8-25-63	<u>3/</u>	1-54	4 4 6 7 7	Iowa City					
63.6 W-6	23,500 (36.7)	7-25,26-62 9-4-62 8-19-63 8-25-63	.0747 .0455 .0840 .0672	7-62	7 7 7 7	21.1 Ralston Creek	1,926 (3.01)	6-1-3,43 7-21-48 7-1,2-50 7-18,19-56 11-15,16-61 7-13,14-62 8-30,31-56	.4890 .3395 .6490 .8580 .129 .550 .398	9-24	3 3 3 3 5 6 7
FLORIDA						MISSISSIPPI					
Vero Beach						Oxford					
8.1 W-1	49,915 (78.0)	10-1-6-51 10-17-22-53 6-15-22,54 10-15-22-56 3-16-23-59 6-17-23-59 3-15-25-60 9-21-10-2-60 9-19-26-62 9-22-30-63	.0419 .0306 .0399 .0797 .0349 .0781 .0748 .1033 .0427 .1059	4-51	3 3 3 3 4 4 5 5 6 7	62.1 W-4	2,000 (3.13)	5-22-57 4-3,4-58 9-9,10-59 1-17-60 8-31-61 9-4,5-62 8-29-63	.2445 .1453 .2910 .0659 .0470 .1438 .2817	1-57	3 4 4 5 5 6 7
						62.2 W-5	1,130 (1.76)	1-22,23-57 12-6,7-57 4-3,4-58 6-10,11-59 6-11-59 1-17-60 8-31-61 9-4-62 8-29,30-63	.1509 .2808 .3072 .6073 .4994 .1273 .3388 .1831 .4610	1-57	3 3 4 4 5 5 6 7

1/ For References 3, 4, 5 and 6 see page 1. Reference 7 is the present 1963 volume.

2/ Peak revised upward from .323 in/hr.

3/ Peak rates withheld pending re-evaluation of records.
4/ Area revised from 1926 to 1930 on more precise watershed measurements.

TABLE 4.—Index to selected runoff events for currently operating watersheds, by States, published through 1963—Continued

Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/	Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/
MISSISSIPPI—Continued						MISSISSIPPI—Continued					
Oxford						Oxford					
62.3 W-10	5,530 (8.64)	4-3-5-58 9-10-12-58 5-22,23-59 1-17-60 8-31,9-1-61 9-4,5-62 8-29,30-63	0.4824 .1354 .0941 .0845 .4331 .1309 .3514	1-57	3 3 4 5 5 6 7	62.13 WC-1	3.88	5-26-59 6-11-59 8-9-60 8-31-61 6-11-62 7-20-63	3.911 4.959 1.533 3.169 3.476 2.607	1-58	4 4 5 5 6 7
62.4 W-12	22,800 (35.6)	5-22,23-57 11-13,14-57 4-3,4-58 3-2,3-60 8-31,9-1-61 9-4,5-62 8-29,30-63	.2475 .1818 .0835 .1084 .0541 .0676 .1579	1-57	4 4 4 5 5 6 7	62.14 WC-2	1.45	5-26-59 6-11-59 8-9-60 8-31-61 6-11-62 7-20-63	4.022 4.022 1.074 1.477 1.375 1.758	7-58	4 4 5 5 6 7
62.5 W-17	32,100 (50.2)	5-22,23-57 11-13,14-57 3-2,3-60 8-31,9-1-61 9-4-6-62 8-29,30-63	.1990 .1778 .1057 .1013 .0579 .1543	1-57	4 4 5 5 6 7	62.15 WC-3	1.61	5-26-59 6-11-59 8-9-60 8-31-61 6-11-62 7-20-63	4.552 5.082 1.897 3.487 3.487 2.470	7-58	4 4 5 5 6 7
62.6 W-19	243	6-4,5-57 7-12-58 8-24,25-59 1-17-60 8-31,9-1-61 9-4-62 10-16,17-62 8-29-63	.2734 .1061 .1469 .0347 .3017 .0035 .2790 .2415	1-57	4 4 4 5 5 6 6 7	62.16 WP-4	3.01	5-26-59 6-11-59 8-9-60 8-31-61 6-11-62 7-20-63	2.596 4.646 .517 3.143 4.020 3.624	7-58 (End 12-63)	4 4 5 5 6 7
62.7 W-24	511 2/512	11-18,19-57 5-9,10-58 1-17-60 8-31-61 7-25-62 10-4-62 8-29-63	.3919 .1102 .0757 .0182 .1220 .0012 .2343	1-57	4 4 5 5 6 6 7	62.17 W-17A	3,200 (5.0)	8-31,9-1-61 9-4,5-62 10-16,17-62 8-29,30-63	.1289 .0158 .2299 .1569	1-57	5 6 6 7
62.8 W-28	1,080 (1.69)	6-30-57 7-22-58 9-9-59 1-17-60 11-15,16-61 9-4-62 8-29-63	.1331 .2415 .5610 .0468 .1456 .1004 .1410	1-57	4 4 4 5 5 6 7	62.18 W-35A	1,090 (1.7)	8-31,9-1-61 9-4,5-62 8-29-63	.2487 .1291 .0555	1-57	5 6 7
						MISSOURI					
62.10 W-32	20,000 (31.3)	11-18,19-57 4-14-16-58 5-22,23-59 3-2,3-60 8-31,9-1-61 9-4-6-62 8-29-31-63	.2826 .0823 .0892 .2142 .2150 .1052 .1895	1-57	4 4 4 5 5 6 7	McCredie					
62.11 W-34 Pigeon Roost Creek	75,000 (117.2)	12-6-8-57 3-25-27-58 4-14-16-59 5-22,23-59 3-2-4-60 8-31,9-1-61 9-4-6-62 8-29,9-1-63	.0859 .0123 .0467 .0230 .0626 .0519 .0306 .0725	1-57	3 3 3 4 5 5 6 7	25.1 W-1	153	10-4,5-41 6-26-42 6-7-45 8-19-49 9-21,22-51 6-30-7-1-61 7-3-41 6-10,11-42 5-16-18-43 6-8-43 5-14,15-45 5-1,2-48 7-22-48 9-12,13-49 6-29,30-57	3/2.01 .944 3/1.18 .359 .183 .181 .930 .922 .700 .665 .822 .197 .395 .548 1.04	1-41	4 4 4 4 4 6 7 7 7 7 7 7 7
62.12 W-35	7,550 (11.8)	11-18,19-57 4-14,15-58 5-22,23-59 3-2-4-60 8-31,9-1-61 9-4,5-62 8-29,30-63	.2325 .1135 .1708 .2330 .0342 .1100 .0304	1-57	4 4 4 5 5 6 7	25.2 Pond #2	44.3	6-29,30-57 6-30-7-1-61 7-3-56 6-14,15-58 10-10,11-59	1.328 .260 .556 .204 .913	1-51 (End 10-63)	4 6 7 7 7
						NEBRASKA					
Hastings						44.1 W-3	481	6-20,21-39 7-10-51 6-7,8-53 4-22,23-57	1.15 1.74 .718 .404	8-38	3 3 3 4
						Continued on next page					

1/ For References 3, 4, 5 and 6 see page 1. Reference 7 is the present 1963 volume.

2/ Area increased to 512 after 12-31-61.

3/ See revised peak rates on page 25.1-3, 2.02 and 1.06 in/hr.

4/ More exact area (154 acres) used in computing events in References 6 and 7.

TABLE 4.—Index to selected runoff events for currently operating watersheds, by States, published through 1963—Continued

Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/	Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/
NEBRASKA—Continued						NEBRASKA—Continued					
Hastings W-3 (Cont'd)						Hastings					
44.1	481	5-1,2-57	0.466		4	44.11	4.15	7-18,19-58	0.782	4-39	4
W-3		6-15-57	1.18		4	7-H 4/	3/4.26	5-4-59	.720		4
		6-12-58	.182		4			7-3-59	5.56		4
		5-15,16-60	.932		5			5-15,16-60	3.63		5
		8-11-61	.144		5			6-14,15-60	2.88		5
		8-23,24-62	.2700		6			8-23-62	2.96		6
		9-9-63	.8450		7	44.12	3.93	7-18,19-58	.394	3-39	4
44.3	2,086	6-5,6-42	.164	1-39	3	8-H 2/	3/3.97	5-15,16-60	2.19		5
W-8	(3.26)	7-10-51	.352		3			9-28,29-60	3.35		5
		6-7-9-53	.264		3			8-23-62	.40		6
		8-28-30-57	.217		3	44.22	3.74	6-15-57	2.07	7-39	4
		6-12-58	.136		4	18-H 5/		6-12-58	1.31		4
		7-3-6-59	.601		4			5-18-59	.427		4
		5-15-17-60	.266		5			5-15,16-60	2.19		5
		6-14,15-61	.0960		5			8-11-61	.374		5
		8-23-25-62	.1270		6			8-23-62	.71		6
		9-9-63	.1650		7			9-10-63	.245		7
44.4	3,490	6-15,16-57	.415	1-39	4	44.26	3.83	8-23-62	3.18	6/5-62	6
W-11	(5.45)	8-28-9-1-57	.118		4	22-H		9-9-63	.308		7
		7-3-6-59	.237		4	44.27	4.20	8-23-62	3.24	6/5-62	6
		5-15-17-60	.231		5	23-H		9-10-63	.354		7
		6-14-17-61	.101		5						
		8-23-26-62	.0667		6						
		9-9-63	.0443		7						
44.5	3.62	6-16,17-57	1.35	3-39	4	NEW MEXICO					
1-H		6-12-58	.677		4	Albuquerque					
		7-3-59	.901		4	47.1	97.2	9-8-47		8-39	3
		5-15-60	.970		5	W-I		8-4-48 7/			3
		8-11-61	.441		5			8-4-48 7/			3
		7-10-51	1.16		6			8-19-56	8/		4
								8-9-57			4
44.6	3.40	6-12-58	.849	3-39	4			8-24-57			3
2-H 2/		7-3-59	2.52		4			8-14-59			4
		5-15-60	1.55		5			7-6-61			5
		8-11-61	.613		5	47.2	40.5	8-24-57	2.793	8-39	4
		8-23-62	1.23		6	W-II		8-21,22-58	1.186		4
44.7	3.95	7-18,19-58	1.56	3-39	4			5-23-59	.519		4
3-H 2/	3/3.77	7-3-59	6.45		4			8-15-61	.034		5
		5-15,16-60	4.32		5			8-4-48 7/	.554		7
		8-11-61	1.66		5			8-4-48 7/	.924		7
		8-23-62	1.99		6	47.3	183	8-19-56	.5259	7-39	4
		10-17-63	.566		7	W-III	2/168	10-19-57	.2006		4
44.8	3.84	7-18,19-58	1.25	4-39	4			8-21-58	.1386		4
4-H 2/	3/3.64	5-4-59	1.23		4	Santa Rosa		8-15-61	.0146		5
		5-15,16-60	6.08		5			8-4-48	.1662		7
		8-11-61	3.17		5	64.1	42,880	7-19-21-55	.0622	1-55	4
		8-23-62	5.48		6	W-1	(67.0)	7-9-11-56	.0437		4
		9-10-63	.776		7			8-16-18-57	.0253		4
44.9	3.93	6-12,13-58	.469	4-39	4			6-5-7-60	.1718		5
5-H 4/	3/4.02	5-4-59	.531		4			7-13-61	.0261		5
		7-3-59	3.50		4			6-30-7-1-62	.0255		6
		5-15,16-60	3.43		5						
		8-11-61	2.77		5						
		8-23-62	.69		6						
		9-10-63	.904		7						
44.10	4.16	6-27-56	1.48	4-39	4						
6-H 4/	3/4.01	6-12,13-58	.424		4						
		7-3-59	3.24		4						
		5-15,16-60	2.89		5						
		6-14,15-60	3.61		5						
		8-23-62	.48		6						
		9-9-63	2.020		7						

1/ For References 3, 4, 5 and 6 see page 1.
Reference 7 is the present 1963 volume.

2/ Watershed discontinued 1-4-55 to 1-1-58

3/ Areas changed 1-1-59

4/ Watershed discontinued 1-7-57 to 1-1-58

5/ Watershed discontinued 7-31-55 to 2-8-57.

6/ P and Q available April 1941 to 12-31-54, but no
selected events presented.

7/ Two storms on same day.

8/ Peak rates withheld pending re-evaluation of records.

9/ Area reduced in 1957, from 183 acres.

TABLE 4.—Index to selected runoff events for currently operating watersheds, by States, published through 1963—Continued

Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/	Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/
OHIO						OHIO—Continued					
Coshocton						Coshocton					
26.1 102 2/	1.26	9-23-45 6-12-57 6-28-57 8-21,22-60 4-25-61 6-28-40 6-21-37	0.583 3.64 1.76 .725 1.42 .780 1.07	4-37 5-57 4-60 7	4 4 4 5 5 6 7	26.13 109	1.69	9-23-45 6-12-57 6-28-57 8-21,22-60 4-25-61 6-28-40 6-18-40	0.780 3.99 1.36 .106 .827 3.55 2.41	11-38 7	4 4 4 5 5 6 7
26.3 129	2.71	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	.527 2.36 1.16 .249 .556 1.16 1.12 .593	4-38 7	4 4 4 4 5 5 6 7	26.14 103	0.65	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25,26-61 6-28-40 6-18-40	1.54 4.01 1.94 .600 .0598 1.63 4.62 3.16	4-39 7	4 4 4 4 5 5 6 7
26.4 135	2.69	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 7-23-40	.678 2.38 1.01 .199 .324 1.32 .933 1.28	4-38 7	4 4 4 4 5 5 6 7	26.15 110	1.27	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	.905 4.24 1.66 .478 0 1.23 2.87 2.37	4-39 7	4 4 4 4 5 5 6 7
26.5 130	1.63	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	.852 4.06 1.43 .444 .195 1.23 1.03 .608	5-38 7	4 4 4 4 5 5 6 7	26.16 113	1.45	9-23,24-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	1.08 3.77 2.08 .505 .274 1.20 2.47 3.21	9-39 7	4 4 4 4 5 5 6 7
26.7 131	2.21	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 5-22-41 6-16-46	.101 1.18 .328 .0749 0 .283 .139 .175	5-38 7	4 4 4 4 5 5 6 7	26.17 118	1.96	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-27-61 6-28-40 6-18-40	1.36 3.11 1.36 .393 .0622 1.02 1.93 2.84	1-40 7	4 4 4 4 5 5 6 7
26.8 132	0.59	8-21,22-60 4-25,26-61 1-25-27-52 2-25-56	0 1.05 .106 .178	5-48 7	5 5 6 7	26.18 111	1.18	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	1.47 3.82 1.62 .620 .0133 1.29 .950 1.47	9-39 7	4 4 4 4 5 5 6 7
26.10 123	1.37	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	.377 5.97 1.91 .553 .478 1.23 1.68E 1.14	1-39 7	4 4 4 4 5 5 6 7	26.19 121	1.42	9-23-45 6-12-57 6-28-57 8-21,22-60 4-25,26-61 6-28-40 6-18-40	.592 1.62 .936 .218 .633 1.10 1.25	4-39 7	4 4 4 5 5 6 7
26.11 115	1.61	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	1.63 4.12 1.59 .321 .172 1.16 2.57 2.61	4-39 7	4 4 4 4 5 5 6 7	26.20 106	1.56	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 8-23-44 8-15-41	2.21 3.03 1.35 .452 1.28 .954 7.63 1.40	4-39 7	4 4 4 4 5 5 6 7
26.12 127	1.65	6-12-57 6-28-57 1-21-59 8-21,22-60 4-25,26-61 6-24,25-56 7-6-49	3.12 1.27 .468 1.18 1.39 2.64 2.05	5-49 7	4 4 4 5 5 6 7	26.21 188	2.05	9-23-45 6-28-57 1-21-59	1.95 1.25 .432	9-39 7	4 4 4

Continued on next page

1/ For References 3, 4, 5 and 6 see page 1. Reference 7 is the present 1963 volume.

2/ Watershed discontinued 1-1-47 to 4-30-57 and 9-1-57 to 3-29-60.

TABLE 4.—Index to selected runoff events for currently operating watersheds, by States, published through 1963—Continued

Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/	Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/
OHIO—Continued						OHIO—Continued					
Coshocton WS-188 (Cont'd)						Coshocton					
26.21 188	2.05	8-21,22-60 4-25-61 6-28-40 6-18-40	0.186 .798 1.56 2.41		5 5 6 7	26.30 196	303	9-23-45 6-16,17-46 8-16-47 9-1,2-50 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	1.06 1.90 .586 1.77 3.72 1.39 .504 .145 1.11 .458 .120	5-37	4 3 3 3 3 4 4 5 5 6 7
26.23 185	7.40	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25,26-61 6-28-40 6-18-40	1.90 2.65 1.31 .229 .0730 .834 2.13 2.44	9-39	4 4 4 4 5 5 6 7	26.31 10	122	9-23-45 6-12-57 1-21-59 8-21,22-60 4-25-61 6-28,29-40 6-18-40	1.72 .329 .236 .363 .880 .146 .368	1-39	4 4 4 5 5 6 7
26.24 187	7.20	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 8-15,16-41 5-31-43	.806 2.75 1.57 .354 .0231 1.03 1.43 .793	1-41	4 4 4 4 5 5 6 7	26.32 5	349	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28,29-40 6-18-40	.321 .432 1.09 .290 .960 .275 .0887 .114	1-40	4 4 4 4 5 5 6 7
26.25 192	7.59	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-27-61 5-31-6-2-43 6-18-40	.789 2.09 .776 .600 T .568 .730 1.61	9-39	4 4 4 4 5 5 6 7	26.33 92	920 (1.44)	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25,26-61 6-28,29-40 6-18-40	.229 .282 .623 .282 .541 .470 .0804 .0843	1-39	4 4 4 4 5 5 6 7
26.26 172	43.6	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	.353 2.64E .969 .278 .0573 .833 .544 .448	2-39	4 4 4 4 5 5 6 7	26.34 94	1,520 (2.37)	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25,26-61 6-28,29-40 6-18-40	.397 .437 .918 .348 .625 .503 .120 .162	1-39	4 4 4 4 5 5 6 7
26.27 169	29.0	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 8-23-44	1.37 2.59 1.40 .465 .0499 1.04 .674 1.48	1-40	4 4 4 4 5 5 6 7	26.35 95	2,570 (4.02)	9-23-45 6-12-57 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28,29-40 6-18-40	.362 .346 .614 .350 .411 .456 .1529 .1675	1-39	4 4 4 4 5 5 6 7
26.28 177	75.6	9-23-45 6-12-57 2/ 6-28-57 1-21-59 8-21,22-60 4-25-61 6-28-40 6-18-40	.721 3.14 1.18 .441 .165 1.04 .684 .776	1-40	4 4,5 4 4 5 5 6 7	26.36 97	4,580 (7.16)	6-4-41 9-23,24-45 7-11-46 6-12-57 6-28,29-57 1-21-59 3/ 8-21,22-60 4-25-61 6-28,29-40 6-18-40	.360 .323 .211 .260 .724 .373 .272 .548 .204 .116	1-37	3 3 3 4 3 4,5 5 6 7
26.29 183	74.2	9-23-45 6-16-46 8-16-47 9-1-50 6-12,13-57 6-28-57 8-21,22-60 4-25-61 6-28-40 6-18-40	1.41 2.58 .388 1.76 2.50 1.30 .0373 1.14 .401 .612	3-38	4 3 3 3 3 4 5 5 6 7	Continued on next page					

1/ For References 3, 4, 5 and 6 see page 1. Reference 7 is the present 1963 volume.

2/ Reprinted on page 182 of Reference 5.
3/ Reprinted on page 208 of Reference 5.

TABLE 4.—Index to selected runoff events for currently operating watersheds, by States, published through 1963—Continued

Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/	Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/
OHIO—Continued											
Coshocton (Cont'd)						Stillwater					
26.37	17,500	9-23,24-45	0.114	10-36	4	37.1	16.7	4-18-57 ^{2/}	6.99	7-51	4,5
994	(27.34)	6-28,29-57	.4385		4	W-1		6-27,28-57 ^{2/}	2.46		4,5
Mill		1-21,22-59	.2510		4			10-1,2-59	2.669		4
Creek		8-21,22-60	.1386		5			10-2,3-59	1.82		4
		4-25,26-61	.2216		5			5-28,29-60	3.0210		5
		6-18,19-40	.0448		7			5-21-61	2.9243		5
								6-7-62	3.06		6
26.38	52.8	8-21,22-60	0.143	5-60	5			9-4-6-63	.410		7
174		4-25-61	1.034		5	37.2	92.0	5-23,24-55	.936	7-51	3
		6-13,14-60	.702		6	W-3		4-18-57	4.52		3
		7-28,29-61	.359		7			6-10-57	.859		3
26.39	187	8-21,22-60	.0992	1-60	5			6-27,28-57	.934		3
194		4-25-61	.8697		5			10-1,2-59	1.749		4
		6-13,14-60	.732		6			10-2,3-59	1.24		4
		7-28,29-61	.402		7			5-28-6-1-60	1.4168		5
OKLAHOMA								5-21-61	1.8575		5
Cherokee								6-7,8-62	1.43		6
								9-4-6-63	.212		7
34.10	1.68	5-21-61	2.58	8-60	5	37.3	206	4-18-57	2.79	7-51	4
W-10		6-2-61	2.76		5	W-4		6-27-29-57	.865		4
		6-9-62	1.13		6			10-1,2-59	1.633		4
		9-14,15-62	3.77		6			10-2,3-59	.939		4
		6-22-63	2.04		7			5-28-6-3-60	.998		5
		6-23-63	2.32		7			5-21-61	1.2552		5
		9-9-63	2.08		7			6-7,8-62	1.15		7
								5-26-63	.506		6
								9-3-5-63	.464		7
34.11	2.12	5-21-61	1.20	8-60	5	TEXAS					
W-11		6-2-61	2.03		5	Riesel					
		6-9-62	.470		6	(Waco)					
		9-14-62	.698		6						
		6-22-63	.552		7						
		6-23-63	1.36		7	42.2	579	4-24,25-57	.868	2-38	4
		9-9-63	1.39		7	C <u>2/</u>		5-9-57	.112	3-49	4
34.12	1.68	7-3,4-60	2.86	7-60	5			5-13-57	.566		4
W-12		5-21-61	2.29		5			6-23,24-59	.625		4
		6-2-61	2.96		5			7-9,10-61	.0498		5
		6-9-62	.925		6			7-16,17-61	.149		5
		9-14-62	1.19		6			6-4,5-62	.314		6
		6-22-63	1.72		7			6-10-14-41	.882		7
		6-23-63	2.50		7	42.3	1,110	6-10,11-41	.747	12-37	3
		9-9-63	1.93		7	D <u>3/</u>	(1.73)	6-15,16-42	.322	3-49	3
34.13	1.99	7-4-60	1.17	7-60	5			7-15-50	.536		3
W-13		5-21-61	1.51		5			4-24,25-57	.797		3
		6-2-61	2.83		5			5-3,4-57	.670		4
		6-9-62	.522		6			6-23,24-59	.604		4
		9-14-62	.681		6			12-31-59	.0697		4
		6-22-63	.931		7			7-16,17-61	.164		5
		6-23-63	2.00		7			7-23-61	.0459		5
		9-9-63	1.86		7			6-4,5-62	.223		6
34.14	2.16	5-21-61	1.68	9-60	5	42.4	4,380	5-6-9-55	.273		7
W-14		6-2-61	2.29		5	G <u>4/</u>	(6.84)	2-14-59	.0487	1-38	4
		6-9-62	.625		6			7-23,24-59	.384	7-57	4
		9-14,15-62	.919		6			11-4,5-59	.0743		4
		6-22-63	1.50		7			12-31-59	.0517		4
		6-23-63	2.37		7			7-16,17-61	.0675		5
		9-9-63	2.04		7			7-23,24-61	.0211		5
34.15	2.15	5-21-61	2.41	9-60	5			6-9-11-62	.0964		6
W-15		6-2-61	2.64		5	42.6	176	7-14-15-41	.0906		7
		6-9-62	.578		6	W-1		6-10-41	3.40	7-37	3
		9-14,15-62	.983		6			3-26-46	.926		3
		6-22-63	1.28		7			4-27,28-49	.627		3
		6-23-63	2.41		7			4-24-57	2.20		3
		9-9-63	1.37		7			5-13-57	1.64		4
						Continued on next page					

1/ For References 3, 4, 5 and 6 see page 1. Reference 7 is the present 1963 volume.

2/ Reprinted on pages 252 and 253 of Reference 5.

3/ Watershed discontinued 6-30-43 to 3-1-49.

4/ Watershed discontinued 7-22-43 to 7-1-57.

TABLE 4.—Index to selected runoff events for currently operating watersheds, by States, published through 1963—Continued

Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/	Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/
TEXAS—Continued						TEXAS—Continued					
Riesel (Waco) (Cont'd)						Riesel (Waco)					
42.6 W-1	176	6-4-57 6-23,24-59 6-15-61 7-16,17-61 6-9,10-62 3-12-16-53	1.09 1.89 .270 .132 2.18 1.130		4 4 5 5 6 7	42.15 Y-7 <u>6/</u>	40.0	4-24-57 5-13-57 6-4-57 6-23,24-59 5-22,23-61 7-16,17-61 6-9,10-62 5-6,7-55	2.36 2.03 1.37 1.76 .152 .0687 .953 .590	1-39 5-47	4 4 4 5 5 6 7
42.7 W-2	130	4-24-57 5-13-57 6-23,24-59 5-22,23-61 6-25-61 6-9,10-62 3-12-16-53	2.04 1.54 1.42 .0459 .201 .943 .760	7-37	4 4 4 5 5 6 7	42.16 Y-8 <u>8/</u>	20.8	4-24-57 5-13-57 6-4-57 6-23,24-59 6-18,19-61 6-9,10-62 3-12,13-53	2.71 2.23 2.15 1.68 .0782 1.86 .639	3-39 1-49	4 4 4 4 5 6 7
42.8 W-6 <u>2/</u>	42.3	4-24-57 5-13-57 6-24,25-59 6-18-61 6-25-61 6-9-62 4-27,28-49	2.20 1.64 1.60 .230 .135 1.41 .438	5-39 1-46	4 4 4 5 5 6 7	42.17 Y-10 <u>2/</u>	18.6	4-24-57 5-13-57 6-4-57 6-23,24-59 5-25-61 6-15-61 6-9-62 5-6,7-55	2.70 1.91 2.40 .703 .366 .338 .394 .595	7-38 5-46	4 4 4 4 5 5 6 7
42.10 W-10 <u>3/</u>	19.7	4-24-57 5-13-57 6-4-57 6-23,24-59 5-22,23-61 6-25-61 6-9,10-62 3-12-53	2.79 1.98 .853 1.96 .422 .334 .824 1.070	8-38 6-46	4 4 4 4 5 5 6 7	42.24 SW-12 <u>11/</u>	2.97	6-4-57 6-23,24-59 6-9-62 3-12,13-53	.610 .714 .468 2.170	1-38 6-47	4 4 6 7
42.11 Y <u>4/</u>	309	3-31,4-1-57 4-24,25-57 6-4,5-57 6-23,24-59 6-25-61 7-16,17-61 6-9-11-62 4-27,28-49	.150 1.81 1.43 .661 .205 .0598 .711 .160	5-37 5-46	4 4 4 4 5 5 6 7	42.28 SW-17 <u>12/</u>	2.99	3-31-57 4-24-57 5-13-57 6-23,24-59 6-25-61 7-16,17-61 6-9-62 3-12-53	.441 2.90 1.74 2.17 .604 .348 3.79 1.610	2-39 1-48	4 4 4 4 5 5 6 7
42.12 Y-2	132	4-24-57 5-13-57 6-4-57 6-23,24-59 6-25-61 7-16,17-61 6-9,10-62 3-26,4-6-46	1.68 1.24 1.79 .796 .253 .0721 .899 .500	1-39	4 4 4 4 5 5 6 7	42.31 P-1 <u>13/</u>	0.243	6-25-61 7-16,17-61 6-9-62	1.67 .131 3.76	1-38 1-60	5 5 6
42.13 Y-4 <u>5/</u>	79.9	4-24,25-57 5-13-57 6-4,5-57 6-23,24-59 6-25-61 7-16,17-61 6-9,10-62 3-12-15-53	1.61 1.14 1.59 .789 .325 .0622 .663 .558	1-39 1-46	4 4 4 4 5 5 6 7	42.32 P-2 <u>13/</u>	0.243	6-25-61 7-16,17-61 6-9-62	1.67 .188 3.73	1-38 1-60	5 5 6
42.14 Y-6 <u>6/</u>	16.3	4-24-57 5-13-57 6-4-57 6-23,24-59 5-25-61 6-15-61 6-9,10-62 5-6,7-55	1.05 .803 .931 1.03 .211 .815 1.00 .373	1-39 5-47	4 4 4 4 5 5 6 7	42.33 P-3 <u>13/</u>	0.243	6-26-61 7-16,17-61 6-9-62	1.53 .310 3.43	1-38 1-60	5 5 6
	<u>2/</u> 20.9					42.34 P-4 <u>13/</u>	0.243	6-25-61 7-16,17-61 6-9-62	1.86 .245 3.51	1-38 1-60	5 5 6
						VERMONT					
						North Danville					
						67.1 W-1	10,610 (16.58)	10-24,25-59 7-30-8-4-60 6-2-5-61 7-31-8-1-62 7-30,31-63	.1029 .0131 .0207 .0410 .0011	11-58	4 5 5 6 7
						Continued on next page					

1/ For References 3, 4, 5 and 6 see page 1. Reference 7 is the present 1963 volume.

2/ Watershed discontinued 6-30-43 to 1-1-46.

3/ Watershed discontinued 6-30-43 to 6-1-46.

4/ Watershed discontinued 6-30-43 to 5-1-46.

5/ Watershed discontinued 6-30-43 to 1-1-46.

6/ Watershed discontinued 6-30-43 to 5-1-47.

7/ Area changed to 16.3 acres 1-1-56.

8/ Watershed discontinued 6-30-43 to 1-1-49.

9/ Watershed discontinued August 1943 through April 1946.

10/ Area changed to 18.6 acres 1-1-56.

11/ Watershed discontinued 6-30-43 to 6-1-47.

12/ Watershed discontinued 6-30-43 to 1-1-48.

13/ Watershed discontinued 7-21-43 to 1-1-60.

TABLE 4.—Index to selected runoff events for currently operating watersheds, by States, published through 1963—Continued

Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/	Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/
VERMONT—Continued						VIRGINIA—Continued					
North Danville (Cont'd)						13.8 W-I Brush Creek		8-31,9-1-59 11-9-11-62 3-1,2-63	0.0697 .0667 .0441		5 6 7
67.2 W-2	146	11-28,29-59 7-30,31-60 6-2,3-61 6-23,24-62 7-30,31-63	0.0360 .0224 .0262 .0162 .0101	10-58	4 5 5 6 7	13.9 W-I Powells Creek	182	7-10-12-59 10-8-59 4-9-12-61 4-12-14-61 5-31-6-1-62 7-29-63	.0816 .3908 .4277 .2502 1.314 .0507	1-58	5 5 5 5 6 7
67.3 W-3	2,067 (3.23)	7-30-8-2-60 6-2-5-61 7-31,8-1-62 7-30,31-63	.0177 .0180 .0348 .0036	1-60	5 5 6 7	13.10 W-I Little Winns Creek	1,471 (2.30)	10-10-12-59 8-26-28-60 9-2-4-60 8-23-61 6-20,21-62 7-1,2-63	1.1156 .2566 .1793 .0672 .0612 .0557	1-58	5 5 5 5 6 7
67.5 W-5 Sleepers River	27,469 (42.92)	7-30-8-5-60 6-2-5-61 7-31,8-1-62 7-30,31-63	.0131 .0200 .0271 .0008	1-60	5 5 6 7	13.11 W-I Rocky Run Branch	555	6-26-29-58 7-10,11-59 9-30-10-2-59 6-7,8-61 6-20,21-62 3-5,6-63	.1289 .1303 .0282 .2240 .0769 .1701	4-58	5 5 5 5 6 7
VIRGINIA						13.12 W-I Pony Mt. Branch	192	6-9,10-58 6-12,13-58 6-2-10-59 9-30,10-1-59 5-26,27-62 3-11-13-63	.0921 .4323 .2842 .0367 .0247 .1744	6-58	5 5 5 5 6 7
Blacksburg						13.13 W-I Chub Run	2,023 (3.16)	9-30-10-8-59 6-9,10-61 8-25-61 6-19,20-62 7-2,3-63	.2855 .0160 .0061 .0931 .0029	10-59	5 5 5 6 7
13.2 W-III	19.3	8-15-39 6-14-40 6-5-42 7-6-49 8-18-56 7-17,18-57 9-6-57 9-10-57 8-21-60 9-4-62 9-4-63	1.10 .103 1.90 .420 .073 .118 .039 .034 1.775 .0012 .0037	5-39	3 3 3 3 4 4 4 5 6 7	13.14 W-1 Fosters Creek	389	9-5-10-60 2-25-28-61 5-1,2-62 3-11,12-63	.0427 .1200 .1486 .1375	9-60	5 5 6 7
13.3 W-IV	3.49	5-5-58 9-30-59 4-4-60 9-4-62 6-29-63	.747 .280 .120 .089 .0321	9-51	5 5 5 6 7	13.15 W-1 Chestnut Branch	1,058 (1.65)	8-24,25-61 11-6-8-61 6-13,14-62 3-16,17-63	.0423 .2610 .2317 .0268	9-60	5 5 6 7
13.4 W-V	6.08	5-5-58 9-30-59 4-4-60 9-4-62 7-3-62	.705 .276 .060 .004 .0972	1-52	5 5 5 6 7	WEST VIRGINIA					
13.5 W-VI	7.70	6-23-55 5-5-8-58 4-4-7-60 9-4-62 6-29-63	.317 .953 .207 .071 .0267	9-51	5 5 5 6 7	Moorefield					
13.6 W-I Thorne Creek	3,054 (4.77)	7-29,30-57 9-13,14-57 1-14-58 4-3,4-60 8-2,3-61 10-14-16-62 3-17,18-63	.0532 .0344 .0347 .0397 .0043 .1152 .0057	6-57	4 4 4 5 5 6 7	66.1 W-1	8.25	8-3-58 ^{3/} 5,7-10-60 8-9-61 5-23,24-62 3-6,7-63	.4436 .1092 .0686 .0944 .0812	6-58	4,5 5 5 6 7
13.7 W-I Crab Creek	786 (1.23)	7-28,29-57 7-21-59 7-27-59 10-16,17-60 8-25-28-61 6-23,24-62 7-23-63	.0728 .0189 .0087 .0066 .1656 .1403 .0048	8-57	5 5 5 5 6 7	66.2 W-2	10.06	8-3,4-58 ^{3/} 5-7-10-60 8-9-61 5-23,24-62 3-6-63	.7587 .1599 .1686 .2496 .1241	6-58	4,5 5 5 6 7
13.8 W-I Brush Creek	893 (1.40)	5-30,31-59 7-22,23-59 9-6,7-59 8-14,15-60	.2874 .8471 .0862 .1510	8-57	4 4 4 5	66.4 W-4	6.32	8-3,4-58 ^{3/} 5,7-10-60 8-9-61 5-23,24-62 3-6-63	.6936 .1377 .0935 .2338 .1145	6-58	4,5 5 5 6 7
						66.5 W-5	9.55	8-3,4-58 5-7-10-60 8-11-61 5-23,24-62 3-6-63	.6513 .1593 .0235 .1684 .0975	6-58	4 5 5 6 7

1/ For Reference 3, 4, 5 and 6 see page 1. Reference 7 is the present 1963 volume.

2/ Drainage area changed to this value on 1-1-62.

3/ Original tabular data and graph in Reference 4 revised in Reference 5.

TABLE 4.—Index to selected runoff events for currently operating watersheds, by States, published through 1963—Continued

Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/	Location location No., watershed No.	Area acres (miles ²)	Date of event	Peak rate (in/hr)	Record began (mo-yr)	Refer- ence No. 1/
WISCONSIN						WISCONSIN—Continued					
Colby						31.3		7-11-44	0.6640		4
29.1	345	7-28,29-49	0.0808	5-49	3	W-3		6-28-45	1.63		4
W-1		5-13,14-56	.151		3			6-24,25-49	.4785		4
		6-4,5-58	.576		3			7-15,16-50	1.30		4
		5-16—18-60	.1847		5			8-5,6-51	1.40		4
		5-4,5-59	.1550		6			8-3-40	.693		6
		9-13,14-62	.3231		6			7-26-40	.805		7
		8-3—5-52	.0564		7			6-3-43	.759		7
								6-22-44	1.23		7
								6-21-54	1.132		7
Fennimore						31.4	171	8-12-43	1.21	6-38	3
31.1	330	8-12-43	.906	7-38	3	W-4		7-11-44	.362		3
W-1		7-11,12-44	.303		3			6-28-45	1.31		3
		6-28-45	1.01		3			6-24-49	1.00		3
		6-24-49	.723		3			7-15,16-50	1.07		4
		7-15,16-50	1.04		4			8-5,6-51	1.76		4
		8-5,6-51	1.69		4			8-3-40	.950		6
		8-3,4-40	.774		6			7-26-40	1.020		7
		7-26,27-40	.876		7			6-3-43	1.045		7
		6-3-43	.618		7			6-22,23-44	.714		7
		6-22,23-44	.510		7			6-21,22-54	.626		7
		6-21,22-54	.714		7						
31.2	22.8	8-12-43	.371	7-38	3	La Crosse					
W-2		7-11-44	2.69		3	32.3	2.71	8-16-40	1.92	1-37	4
		6-28-45	2.68		3	CW		6-29-41	1.25		4
		6-24-49	.730		3			9-15-41	2.58		4
		7-15,16-50	1.56		4			6-23-52	4.50		4
		8-5,6-51	2.14		4			7-19-52	3.55		4
		8-3-40	.954		6			8-26,27-59	2.78	(End	4
		7-26-40	.789		7			7-4-53	1.71	9-63)	7
		6-3-43	.844		7						
		6-22-44	2.74		7	32.4	2/2.95	6-23-52	3.39	1-52	4
		6-21-54	.926		7	CWA		7-19-52	3.53		4
31.3	52.5	8-12-43	1.125	7-38	4			8-26,27-59	2.30	(End	4
W-3								7-4-53	1.70	9-63)	7

1/ For Reference 3, 4, 5 and 6 see page 1. Reference 7 is the present 1963 volume.

2/ Erroneously reported as 3.06 acres in References 1 and 5.





